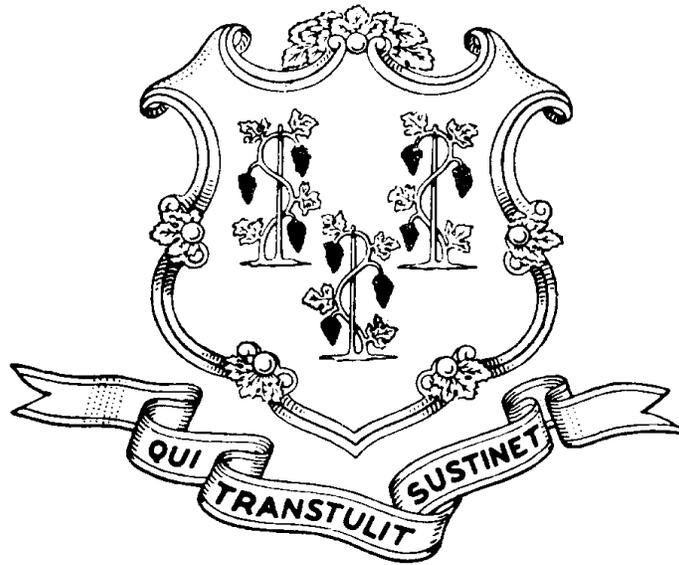


# LOOKING TOWARD 2000

## AN ASSESSMENT OF HEALTH STATUS AND HEALTH SERVICES



STATE OF CONNECTICUT  
DEPARTMENT OF PUBLIC HEALTH

February 1, 1999

Dear Colleague:

In January of 1998, the Department of Public Health published a working draft of *Looking Toward 2000 - An Assessment of Health Status and Health Services* to comply with Sec. 19a-7a, C.G.S., requiring the Department to determine public health priorities for the state of Connecticut. The *Assessment*, based on data-driven analyses of the health status and health service needs, presented 25 public health priorities which promote the life expectancy and quality of life for state residents.

Over copies of the draft were distributed to legislators, commissioners, local health officials, community agencies, health care providers, and consumers. We held a series of six public hearings across the state during the Spring of 1998 and solicited feedback from the health professionals and the community at large.

The comments we received during the past year supported our efforts to provide a comprehensive data resource for evaluating Connecticut's health status, health services, and public health infrastructure. The final document is now complete and includes an expanded infrastructure section, an update of the discussion on managed care programs, a new Appendix produced by the Department of Mental Health and Addiction Services, and most significantly, Connecticut's public health priorities are now rank ordered within the categories of health status, health services, and essential public health programs.

Connecticut needs to focus its resources now on those areas of activity that will have the most significant impact on the health of the state. Beyond our commitment to adequately maintain essential public health programs, DPH feels that its policy and program development should emphasize those health conditions that are the most significant for our residents: cardiovascular and cerebrovascular disease, cancer, unintentional injuries, and the modifiable risk factors associated with them: tobacco use, diet and cholesterol, physical inactivity, and the control of hypertension. The priorities described in this *Assessment* can be condensed into four main focus areas for public health action in the next biennium: Cardiovascular disease, Cancer, Injuries, and Surveillance and monitoring.

I am happy to now present you with the final *Assessment of Health Status and Health Services*.

Sincerely,

Stephen A. Harriman  
Commissioner

# LOOKING TOWARD 2000

## AN ASSESSMENT OF HEALTH STATUS AND HEALTH SERVICES

January 1999

Connecticut Department of Public Health  
Stephen A. Harriman, Commissioner

Office of Policy, Planning, and Evaluation  
P.O. Box 340308, MS #13PPE  
Hartford, CT 06134-0308  
Telephone: 860 509-7120  
Fax: 860 509-7160  
E-Mail: [webmaster.dph@po.state.ct.us](mailto:webmaster.dph@po.state.ct.us)



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---

Special acknowledgments to:

Elizabeth Burns, Chief of Staff

Marie V. Roberto, Chief, Office of Policy, Planning, and Evaluation

Michael J. Hofmann, Director of Research and Planning

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Hugh Adams (retired)

Mary Adams

Federico Amadeo

Nancy Barrett

Nancy Berger

Alfred P. Bidorini<sup>2</sup>

Lenore Blake (retired)

Carol Bower

Linda Burns<sup>4</sup>

Kenneth Carley

Victoria Carlson

Matthew Cartter

Marcie Cavacas

Carol Christoffers (retired)

Kathleen Cobb

Hector Colon

George Cooper

Lois Daniels

Cynthia Denne

Lois Desmarais

Deborah Ducoff-Barone

Carolyn Jean Dupuy

Susan Cole England<sup>5</sup>

Starr-Hope Ertel

Mary Lou Fleissner

Joan Foland

Karen Frost

Thomas Furgalack

Elise Gaulin-Kremer

Jadwiga Goclowski

James Hadler

Claudette Hastings

Elizabeth Hicken

Meg Hooper

Margie Hudson

Susan Jackman

Heidi Jenkins

Angela Jimenez

Mary Kapp

Thomas A. Kirk, Jr., Deputy Commissioner<sup>1</sup>

Julianne Konopka

Patricia Kucharski (retired)

Lyn Lanoue<sup>3</sup>

Heping Li

Joseph Marino

Leonard McCain

Lisa McCooey

Mary Jane Mitchell

Phil Mollison

Pat Mshar

Lloyd Mueller

Charles Nathan

Lynn Noyes

Barbara O'Connell

Frederick Pestorius

Anthony Polednak

Cindy Rankl

Vincent Sacco

Judith Sartucci

Dan Savino

Paul Schur (retired)

Gordon Shand

Ruth Gitchell Shepard (retired)

Alan Siniscalchi

Janet St. Clair

Kristin Sullivan

Brian Toal

Debra Tommasone

Beth Weinstein

Ardell Wilson

---

<sup>1</sup> CT Department of Mental Health and Addiction Services

<sup>2</sup> CT Department of Mental Health and Addiction Services

<sup>3</sup> CT Department of Social Services

<sup>4</sup> CT Office of Policy and Management

<sup>5</sup> Office of Health Care Access

Donald Iodice  
Gerald Iwan

Stanton Wolfe  
Warren Wollschlager

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<sup>a</sup> Appendix P contains a complete color set of maps found in the text.

## EXECUTIVE SUMMARY

Connecticut's last comprehensive state health plan, *Health, Connecticut...Looking Ahead, Planning Ahead*, was published in 1986 to inform policy makers and the public about the health of Connecticut residents, the state's health care delivery system, the need for health services and programs, and their fiscal implications. The current document shares those objectives.

Chapters 1 and 2 of *Looking Toward 2000 -- An Assessment of Health Status and Health Services* describe the infrastructure that protects the health and safety of the population and address the emerging issues facing public health. Chapters 3 and 4 provide an assessment of Connecticut's health status and components of the existing health service delivery system. Finally, Chapter 5 identifies the public health priorities for Connecticut in the next biennium.

### PUBLIC HEALTH INFRASTRUCTURE

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The public health infrastructure refers to the federal, state, and local governments' capacity to meet the basic responsibilities of preserving the health of the community. The basic responsibilities include: vital statistics, health information and education, epidemiological investigation, laboratory analysis, and administration.

The Department of Public Health (DPH) is the lead administrative agency for public health initiatives in the state. Other state agencies involved with health issues include the Department of Mental Health and Addiction Services (DMHAS), Department of Social Services (DSS), Department of Children and Families (DCF), Department of Education (DOE), and the Department of Mental Retardation (DMR). Local health departments are the providers of population-based essential public health services at the local level. Each municipality in Connecticut is served by a local health department or district. In 1997, there were 69 part-time and 26 municipal full-time health departments, and 18 health districts serving 83 municipalities.

The public health infrastructure supports the national and state goals and objectives developed to improve health status and services in the next century. The *Healthy Connecticut 2000 Baseline Assessment Report* provides a framework for program planning and evaluation with 130 objectives that focus on health status (to reduce death, disease, and disability), risk reduction (to reduce the prevalence of risks to health), and services and protection (to increase comprehensiveness, accessibility, and quality of preventive services and interventions).

Healthy community initiatives identify the local interventions needed to improve the overall health and quality of life by organizing the business, government, and health sectors to address local issues and needs. The healthy community concept relies on personal and community responsibility for determining health status.

## EMERGING ISSUES

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Emerging public health issues are those that either pose a threat or reduce a threat to the health of the population. An emerging issue can be a disease or injury that has either increased its incidence or prevalence in the past decade or threatens to increase in the near future. It can also be a “horizon issue” that has just appeared without the future public health effects being known. Finally, it can be a long-standing health issue that has become more prominent in its effects on the public’s health. The dynamic areas of public health concern for Connecticut are summarized below.

### EMERGING ISSUES IN HEALTH STATUS

#### Infectious Diseases

- New tools for preventing infectious diseases, including anti-viral agents to prevent HIV transmission; vaccines against varicella, pneumococcal disease, hepatitis A, rotavirus gastroenteritis, and Lyme disease; and national prevention initiatives for foodborne illnesses and Group B streptococcal disease.
- The changing epidemiology of tuberculosis, the greatest incidence of which is now in those born outside the U.S., and sexually transmitted diseases, which principally affect minorities in urban areas.
- The emergence of drug-resistant bacteria, which challenges both the medical and public health communities.

#### Chronic Conditions and Risk Reduction

- Violent crimes in which youth are perpetrators and/or victims.
- Obesity among children, adolescents, and adults, which is a risk factor for heart disease, stroke and high blood pressure; colon, breast, and prostate cancer; and diabetes.
- Iron overload disease (hemochromatosis), which leads to severe organ damage, arthritis, cirrhosis, diabetes, heart disease, or psychological and sexual dysfunction.
- Asthma, the most common chronic disease of childhood.
- Genetic research, particularly its impact on the diagnosis and treatment of diseases.
- Cardiovascular disease in women.

#### Environmental Conditions

- Environmental tobacco smoke, which contributes to deaths and to the development of acute and chronic illnesses.
- Food protection -- identifying safe and effective methods of ensuring that the food supply is free of pathogenic organisms.
- Health hazards from housing materials, including lead, asbestos, and formaldehyde, and radon emissions from soils.

## Occupational Conditions

- Latex allergy in workers with chronic latex exposure.
- Endocrine disrupters, environmental chemicals that exert toxic effects by mimicking hormones or by changing the way hormones normally function.

## Family Health

- Infant mortality, particularly the disparity in mortality rates between whites and non-whites, and low birthweight.
- Proper nutrition for children in child care centers.
- Breastfeeding to prevent illnesses early in life and to reduce the risk of certain chronic diseases.
- Fetal alcohol syndrome, resulting from maternal alcohol consumption during pregnancy.
- Neural tube defects such as spina bifida and anencephaly.

## EMERGING ISSUES IN HEALTH SERVICES

### Managed Care

- *Managed Care.* As more people are insured by managed care organizations, a change is occurring in the health care system's financial incentives and service delivery. The major changes are the consolidation of hospitals through mergers and acquisitions, a reduction in the length of inpatient hospital stays, and the conversion of non-profit hospitals and health plans to for-profit status.
- *Medicare Managed Care.* As a way to contain costs for the aging population, both private companies and the federal government are offering managed care plans to retirees and the Medicare-eligible.

### State Managed Care Initiatives

- *Employee Health Plan.* Employees of the State of Connecticut are offered several managed care plans for health insurance; an indemnity plan was eliminated.
- *Healthcare for Uninsured Kids and Youth (HUSKY).* Connecticut took advantage of a new Title XXI of the Social Security Act, called the State Children's Health Insurance Program (CHIP), and created the HUSKY program in October, 1997. The program is administered by the Connecticut DSS and has three parts, HUSKY Part A, HUSKY Part B, and HUSKY Plus. For Part A, CHIP funding is used for a Medicaid expansion which covers 14-18 year olds with family income up to 185% of poverty. Part B is a new state program which will provide health insurance for uninsured children under age 19 whose family income is between 185% and 300% of the federal poverty level. Families with children who are uninsured and have incomes over 300% of the federal poverty level may buy into the plan at the state-negotiated rate. Children enrolled in Part B, whose needs cannot be accommodated by the Part B standard benefit package, can apply for coverage under HUSKY Plus. HUSKY Plus provides two supplemental insurance options at no additional cost to children with special physical or behavioral health care needs.
- *Medicaid Managed Care.* DSS administers the State's Medicaid Managed Care program ("HUSKY Part A", formerly "Connecticut Access") through a federal 1915(b) waiver approved by the Health Care Financing Administration (HCFA). The program covers those clients in the TANF (Temporary Assistance to Needy Families) program and related coverage groups such as pregnant women extension groups, children up to age 19 with incomes under 185% of poverty, and children in the custody of DCF. EPSDT participation rates have improved over fee-for-service rates but remain below the 80% target mandated by the federal government.
- *Integrated Care for Dually Eligible Individuals.* As of August 1997, Connecticut was developing a Section 1115 Research and Demonstration Waiver proposal that would create a managed care model for the financing

and delivery of health care services to older persons and persons with disabilities who are dually eligible for Medicaid and Medicare. In response to concerns raised that seeking a Section 1115 waiver was too comprehensive, DSS was directed to scale this initiative back to a pilot project. This pilot project is called Connecticut Lifelong Care (CTLIC) and is modeled after the national program known as the Program for All-inclusive Care for the Elderly (PACE). It will offer adults who are qualified for nursing home care and are age 55 or older and are eligible for both Medicare and Medicaid benefits the opportunity to remain in the community. The program's goal is to improve coordination of community based services in order to delay or prevent more costly institutionalized care. Services are scheduled to begin in late 1999.

- *Managed Care Regulation.* Recent legislation provided the state's Department of Insurance with broader oversight of managed care organizations and their utilization review companies, and mandated coverage for 48-hour maternity stays and 48-hour hospital stays after mastectomy or lymph node dissection.

#### Policy Issues

- *Quality Assurance.* Current debate focuses on quality centers, performance measurement, and how to hold health plans accountable for the health status of their members. Quality oversight in Connecticut is fragmented across several agencies.
- *Utilization Review.* Guidelines designed to set standards for managed care organizations regarding the assessment of medical necessity and appropriateness of clinical services have been misused and may be inadequate.
- *Managed Care Integration with Public Health.* There are concerns about access to preventive health services, the incorporation of health promotion and disease prevention into the mainstream of care, and the provision of public health services (vaccines, outreach, etc.) under managed care.

#### Uninsured and Underinsured Populations

- The numbers of uninsured in Connecticut's non-elderly population has increased. Concurrently, employer-based health insurance coverage has declined.
- Large disparities in insurance coverage exist among races and ethnicities, with Hispanics being more likely to be uninsured than any other ethnic groups.
- The underinsured are thought to represent a greater proportion of the population than previously estimated.

#### Elderly Services

- As the population ages, the prevalence of chronic health conditions that predominantly affect the elderly will increase.
- The health care marketplace is not supplying enough affordable, accessible health and social services for the chronically ill and disabled elderly population.
- Although the demand for care-giving will increase as the elderly population increases, the supply of caregivers and family support personnel is decreasing.

#### Financing Long Term Care

- Medicare does not finance most nursing facility and home care services. Private, long-term-care insurance is a small but growing source of financing for nursing facilities and home care, and other financing options have emerged and are being tested.
- A moratorium on new nursing facility beds in Connecticut has been in effect since 1991 and is scheduled to remain in effect until 2002.
- Utilization demand is increasing for home- and community-based services. These services less costly than nursing homes.

## HEALTH STATUS AND RISK REDUCTION

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### SOCIODEMOGRAPHIC PROFILE OF CONNECTICUT

- Although Connecticut has lost population from 1990 to 1995, outmigration is slowing.
- An important demographic trend in the state is the aging of the population; compared to 1995 numbers, the proportion of persons age 85 and older is projected to be 20% higher in 2000, 43% higher in 2005, 63% higher in 2010, and 78% higher in 2020.
- In 1990, the most recent year for which data are available, Connecticut's population of 3.3 million was 85% white, 8% black, 6% Hispanic, and 1% other.
- Connecticut's economic recovery from the recession that began in 1989 has lagged behind that of the rest of New England; still, the state ranks first in the nation in *per capita* income.
- Striking racial/ethnic disparities exist among whites, blacks, and Hispanics in the areas of education level, housing, and income, with minorities faring worse than whites in all respects. Wide variation in these factors also exists by town.

### CONSENSUS HEALTH INDICATORS

Based on a consensus set of 18 health indicators used by the U.S. Public Health Service for community health assessment, the overall health status of Connecticut residents is comparatively good. In 1992, Connecticut ranked among the best ten states for eight indicators (white infant mortality; death rates for all causes, motor vehicle crashes, work-related injury, suicide, and stroke; births to adolescents; and prenatal care), but was among the worst ten states for measles incidence, AIDS incidence, and sub-standard air quality.

### MORTALITY

- When ranked by number of deaths, the top five leading causes of death for Connecticut residents (1989-91) were diseases of the heart, cancer, cerebrovascular disease, pneumonia and influenza, and chronic obstructive pulmonary disease. In 1995, these same causes were still among the top five.
- When ranked by prematurity of death (years of potential life lost to age 65), the top five leading causes of premature death (1989-91) were cancer, unintentional injuries, diseases of the heart, suicide, and homicide. By 1995, homicide had been replaced by HIV infection as one of the top five causes of premature mortality.
- There was substantial geographic variation in mortality (1989-91) in terms of both years of potential life lost (YPLL) and age-adjusted mortality rate (AAMR). The highest YPLL rates were found in the towns of Bridgeport, Hartford, New Haven, and New London. The towns with the highest AAMRs were Hartford, New Haven, Bridgeport, Sprague, and Voluntown.

### MATERNAL AND INFANT HEALTH

#### Infant Mortality

- From 1986 to 1995, there was an overall decline in infant mortality, from 9.0 to 7.3 deaths per 1,000 live births, largely reflecting a 33% decrease in the neonatal mortality rate. The decrease in infant mortality is

believed to result from the improved efficacy of newborn intensive care units, with increased survival mainly for infants of moderately low birthweight.

- Rates of infant mortality among blacks exceeded rates for whites in all years from 1986 to 1995, reflecting the higher prevalence among blacks of risk factors such as low birthweight, birth rates among teenagers, and lack of adequate prenatal care.
- Further reductions in infant mortality and morbidity will require new strategies to modify the behaviors and lifestyles that affect birth outcomes, such as smoking, drinking, illicit drug use, and utilization of prenatal care services.

#### Births to Teens and Women Aged 40-44 Years

- Women at both extremes of the childbearing age distribution were more likely to have poor pregnancy outcomes than women in their middle years.
- Birth rates among 15-19 year olds increased slightly from 1986 to 1995. In this age group, along with the 20-24 year age group, birth rates to Hispanic teens were the highest, followed by black non-Hispanics and white non-Hispanics. Rates for the three racial/ethnic groups converged at ages 25-29.
- Birth rates for teens varied substantially by town. The birth rate for females aged 15-17 was four times higher in Hartford than the statewide rate of 2.7% in 1990. Seven other towns (Bridgeport, New Haven, New London, Waterbury, New Britain, Windham, and Meriden) had rates that were at least 1.6 times above the state rate.

#### Prenatal Care

Prenatal care utilization is assessed using two risk indicators: “late or no prenatal care,” which identifies mothers who did not receive care during the first trimester (13 weeks) of pregnancy; and “non-adequate prenatal care,” which is a composite index reflecting both the trimester in which the first prenatal care visit was made and the total number of visits.

- From 1986 to 1995, the level of late or no prenatal care received by Connecticut women improved slightly, and in 1995 only about 12.3% of mothers did not initiate care during the first trimester (about half the U.S. rate). Blacks and Hispanics experienced much higher percentages than whites, but their rates of improvement over time were much better than that for whites.
- The 1986-1995 trends for non-adequate prenatal care and the differences by race/ethnicity paralleled those for late or no prenatal care, including the greater rates of improvement for blacks and Hispanics.

#### Low Birthweight

Low birthweight (<2,500 grams) is a measure of the adequacy of fetal growth during pregnancy. It is a major cause of infant mortality and long-term health problems, and is associated with increased risk of disability, such as mental retardation, cerebral palsy, and vision and hearing disabilities. Low birthweight can be prevented, however, by modification of risk factors such as poor nutrition, smoking, alcohol and other substance abuse, exposure to environmental toxicants, and absent or inadequate prenatal care.

- Percentages of low birthweight in Connecticut remained fairly constant from 1986-1995, with blacks and Hispanics having higher percentages than whites.
- In 1995, low birthweight accounted for about 7% of births and 69% of infant deaths in Connecticut. Women aged 15-19 had the greatest risk of delivering a low birthweight baby, and women aged 40-44 had the second greatest relative risk.

## BEHAVIORAL RISKS

The Behavioral Risk Factor Surveillance System (BRFSS) is a statewide telephone survey of non-institutionalized adults aged 18 and older that provides prevalence estimates for key behavioral risk factors.

Of the risk factors assessed in the survey, those discussed below are directly related to chronic diseases, low birthweight, and other adverse health outcomes.

### Tobacco

Smoking is associated with deaths from cardiovascular disease, lung, cervical, and bladder cancers, pneumonia, influenza, chronic obstructive pulmonary disease, burns, and diseases of newborn (sudden infant death syndrome and respiratory diseases). An estimated 19% of all deaths in Connecticut in 1989 were attributed to smoking. In 1995, about 1 in 5 adults reported current smoking, down from 1 in 4 in 1989. Also about 3 in 10 high school students reported current smoking.

### Alcohol

Alcohol abuse has been linked to heart disease, cancers, hepatitis, cirrhosis of the liver, and other diseases. It is a factor in about half of all motor vehicle fatalities, and can adversely affect birth outcomes. In 1995, 64.8% of Connecticut adults reported current drinking, 14.4% binge drinking, 4.4% chronic drinking, and 2.5% drinking and driving. Men and young people were at higher risk than others for alcohol use and abuse, and non-whites overall were at lower risk than whites for binge drinking.

### Physical Inactivity

Regular exercise decreases the risk of coronary heart disease and may also have beneficial effects on hypertension, diabetes, weight control, osteoporosis, anxiety, and depression. Between 1989 and 1994, at least 20% of Connecticut adults reported "no leisure time physical activity." Women and non-whites were significantly more likely than men and whites to report no leisure time physical activity.

### High Blood Pressure

High blood pressure (hypertension) is a major risk factor for stroke and heart disease. Because it has no clear symptoms, regular blood pressure measurements are needed for detection and control. Weight control, physical activity, lower salt intake, non-smoking, and moderate alcohol consumption reduce the risk of hypertension. For 1991 through-1993, and again in 1995, more than 94% of Connecticut respondents indicated that they had their blood pressure measured by a health professional within the past 2 years. In 1995, nearly 1 in 5 adults reported they had ever been told their blood pressure was high.

### Blood Cholesterol

High blood cholesterol is a major modifiable risk factor for cardiovascular disease, especially coronary heart disease. A diet high in fat, especially saturated fat, is a risk factor for high cholesterol, and physical inactivity and smoking are related to lower levels of HDL--the "good" cholesterol. When asked in 1995, whether they had been tested for blood cholesterol and told that it was high, 25.2% of Connecticut respondents reported "yes." This represents about 472,000 state residents.

### Diet and Overweight

Consumption of fruits and vegetables is related to reduced cancer risk, heart disease, and certain birth defects, whereas overweight is associated with a higher risk of cardiovascular disease, type II diabetes, hypertension, high blood cholesterol, and certain cancers. In 1994, two-thirds of Connecticut adults reported they did not eat five servings of fruits and vegetables daily, and in a 1995 survey of Connecticut students, more than 50% reported not eating any fruit and 25% reported not eating any vegetables the previous day. In 1995 about 1 in 4 adults was overweight. From 1989 to 1995, men were more likely than women to be obese.

## CHRONIC DISEASES

Chronic diseases are generally characterized by multiple risk factors, a long latency period, a prolonged course of illness, non-contagious origin, functional impairment or disability, and low curability. Although the causes of many chronic diseases are unknown, specific risk factors associated with many of the leading chronic diseases have been identified; many were discussed under *Behavioral Risks* (above).

### Cardiovascular Disease (CVD)

CVD is a category of disorders affecting the heart and blood vessels, and includes coronary heart disease, diseases of the heart, atherosclerosis, hypertension, and cerebrovascular disease. The major risk factors are smoking, physical inactivity, hypertension, and overweight. Although age-adjusted mortality rates for CVD declined steadily from 1986 to 1995, it remains the leading cause of death in Connecticut. For diseases of the heart (1989-1991), premature death rates were greater for black males and females than for whites and Hispanics. Blacks of both sexes also had the highest age-adjusted mortality rates, compared to whites and Hispanics.

### Cancer

Several types of cancers were selected for inclusion here on the basis of high incidence rates (lung and breast), knowledge of major causal factors (i.e., smoking for lung cancer, and excessive sun exposure for melanoma), and availability of effective screening tests that can detect cancers at an early stage (breast, cervical, and colorectal cancers).

- *Lung Cancer.* Lung cancer is the leading cause of cancer deaths in Connecticut. About 90% of lung cancers may be preventable through abstinence from tobacco. Incidence and mortality rates declined among Connecticut males from 1980-1994, but increased among women. Crude incidence was greater in whites than blacks, and particularly in white females. In both whites and blacks, age-specific average annual incidence rates (1990-1994) rose sharply after ages 40-44, especially among males.
- *Breast Cancer.* Breast cancer is the most common cancer diagnosed among Connecticut women and is the second leading cause of cancer death. The risk of breast cancer may be modified by lower fat intake, higher fruit and vegetable consumption, increased physical activity, reduced body weight, and reduced alcohol intake. Nearly one-third of Connecticut breast cancers were detected at regional and distant stages, after some metastasis had occurred. Mammography and clinical breast examination are important in reducing breast cancer mortality, through detection at an early stage.
- *Colorectal cancer.* Colon cancer is the third most commonly diagnosed cancer in Connecticut but detection and treatment of early-stage cancers reduces mortality. Evidence also supports screening for colorectal cancer among persons 50 years of age and older.
- *Melanoma of the Skin.* This cancer is a growing public health problem, and in many cases maybe prevented by modifying behavior (i.e. avoiding sun exposure) starting in childhood. Age-standardized incidence rates increased for both sexes in Connecticut from 1980-84 through 1990-94, and in 1990-94 the rates were 18.2 and 12.5 per 100,000 population in males and females, respectively. Incidence varied by town, with higher than expected incidence in certain shoreline towns.
- *Invasive Cervical Cancer.* This cancer is largely preventable through screening to detect pre-invasive lesions. Social class affects the risk of developing lesions that progress to invasive cancer. Incidence rates in Connecticut declined from 1980 to 1994, and in 1990-94 the age-standardized incidence was 7.4 per 100,000 population. For the same period, crude incidence rates were higher for black women than for white women (12.8 and 8.8/100,000, respectively). Age-specific incidence rates in 1990-94 rose through ages 45-49 years, with no clear pattern at older ages. The 1994 age-standardized death rate was 2.1 per 100,000 population, nearly twice the year 2000 objective.

## Chronic Obstructive Pulmonary Disease (COPD)

COPD (chronic bronchitis, emphysema, chronic airway obstruction) is thought to result from direct interaction of lung tissue with environmental agents, of which tobacco smoke is the most significant; cigarette smoking is thus the strongest risk factor for COPD. From 1986-1995, AAMRs for COPD in Connecticut males were fairly constant (around 30 per 100,000 population), whereas rates for females increased steadily, from 15.3 to 20.4/100,000.

## Diabetes

Diabetes is the leading cause of end-stage renal disease over all ages, and the leading cause of blindness among working-age adults. An estimated 127,000 Connecticut adults or 5.1% of the population have diagnosed diabetes; however, the true prevalence may be twice that value. Prevalence rates are higher in black non-Hispanics and Hispanics than in white non-Hispanics, and prevalence by age group is highest at age 65+. In addition, an estimated 915,170 Connecticut adults are at increased risk of undiagnosed diabetes due to the risk factors of age, obesity, sedentary lifestyle, or history of gestational diabetes. Diabetes was the seventh leading cause of death in Connecticut in 1994. AAMRs in 1989-1991 were about 2.5 times greater for blacks than whites, regardless of sex.

## Dental Diseases

Dental diseases and conditions are among the most prevalent and preventable chronic health problems. A severe lack of access to dental care exists for Connecticut's Medicaid-eligible children. The 1996 prevalence of dental decay in Connecticut 6-8 year old children was approximately 55%. Prevalence rates for baby bottle tooth decay, caused by improper feeding practices, were 25% in children enrolled in Head Start in the city of Hartford, and 20% in the towns of northwestern Connecticut.

## INJURIES

### Unintentional Injuries

Unintentional injuries kill 1,000 Connecticut residents and result in 36,000 hospital admissions in Connecticut each year. Injuries are the leading cause of premature death for males and the second leading cause for females, surpassed only by cancers. The age-adjusted mortality rate for unintentional injuries declined from 1989 to 1991, then rose 14% from 1991 to 1994. In 1994, they were the third leading cause of death based on age-adjusted mortality rate (24.4 per 100,000 population) and the sixth leading cause of death in Connecticut based on number of deaths (1,004). Also, they were the leading cause of death for individuals aged 1-34 years. Deaths to males exceeded deaths to females in every age group. More children and adolescents die each year from unintentional injuries than from all other childhood diseases combined. Important risk factors for unintentional injuries in general are alcohol/substance abuse, risk-taking behavior, the perception that injuries are "accidents," and low socioeconomic status.

- *Residential Fires.* In 1994, burn injury and smoke inhalation killed 42 Connecticut residents. Children under age 5 and adults age 65+ each had an AAMR of 2.2 per 100,000 population, or twice the rate for state residents of all ages. The AAMR for black males was 2.4/100,000.
- *Falls.* In 1995, falls were the most common cause of non-fatal injury and the second leading cause of unintentional injury death in Connecticut (196 deaths). In 1995, there were 11,055 hospitalizations in Connecticut due to falls, or nearly 60 hospitalizations for every fatality. Males at all ages and elderly females are at higher risk than the rest of the population for non-fatal fall-related injuries.

- *Motor-vehicle-related Injuries.* Motor vehicle crashes are the leading cause of unintentional injury death in Connecticut, accounting for an average of nearly one death per day. No disease or injury claims more lives of people between the ages of 1 and 34. Motor-vehicle-related injuries also account for nearly 4,000 hospitalizations in Connecticut each year. Modifiable risk factors for motor vehicle crashes include non-use or improper use of safety belts and child safety seats, drinking and driving, and, for motorcyclists, failure to wear a helmet. The 1994 Connecticut AAMR for motor vehicle crashes was 10.9 per 100,000 population, which surpassed the year 2000 target. Occupants including both drivers and passengers represented more than half of 1994 fatalities, while pedestrians constituted about one-quarter of the deaths. Death rates and number of deaths due to motor vehicle crashes, and alcohol involvement in fatal crashes in Connecticut dropped since the 1980s; the number and percentage of fatal crashes with alcohol involvement increased, however, in 1995. In 1994, males between the ages of 15 to 34 accounted for the most motor vehicle-related fatalities, and males aged 85 and older had the highest rate of death. Between 1990 and 1994, three out of every four motor-vehicle-related fatalities to Connecticut residents occurred to males.
- *Drownings.* From 1989 to 1994, there were an average of 41 drownings annually among Connecticut residents. The Connecticut's age-adjusted death rate for drowning was 0.9 per 100,000 population which surpassed the year 2000 objective of 1.0 deaths per 100,000. The number of deaths in Connecticut from unintentional drownings declined between 1989 and 1994, due mainly to a decline in male drowning deaths.

### Intentional Injuries

Intentional injury encompasses injuries and deaths that are self-inflicted or perpetrated by another person. In 1995, 2,134 hospitalizations of Connecticut residents were reported for self-inflicted injury and 3,340 for assault. The categories of intentional injuries discussed here are suicide and attempted suicide, homicide and injuries due to assault, domestic violence, and deaths and injuries due to firearms.

- *Suicide and Suicide Attempts.* Suicide ranks eleventh as a cause of death in Connecticut, and sixth in terms of premature deaths. The state AAMR for suicide was fairly stable from 1984-1994. Connecticut's 1994 age adjusted-suicide rate of 9.1 per 100,000 was about 20% lower than the U.S. rate, but fell far short of the year 2000 target rate of 6.7 per 100,000. In 1994, 320 Connecticut residents took their own lives. Most suicides (249) were males. The highest rate of suicide was among elderly white males, and the rate for whites was double that for blacks. Nearly half of Connecticut suicides were performed with a firearm. Hangings and carbon monoxide poisoning from motor vehicle exhaust accounted for one-fourth and one-fifth of the suicides respectively.
- *Homicide and Injury Due to Assault.* In 1994, an average of four Connecticut residents died each week from homicide; deaths from intentionally inflicted injuries included seven children under age 5. In 1996, 7,012 aggravated assaults were reported to police. Firearms were used in seven out of ten homicide deaths. Although Connecticut's homicide rate of 7.5 per 100,000 was lower than the U.S. rate of 10.1, the state rate was considerably higher than the year 2000 rate. Connecticut's age-adjusted mortality rate for homicides nearly doubled from 1986 to 1994, attributable to the increase in firearm homicides. During the same period, the rate of death due to non-firearm homicides remained steady. By contrast, the aggravated assault rate decreased 63% from 1990 to 1995. Three times more males than females died from homicide. In 1994, the 15-34 year age group accounted for the most deaths; 44% of the victims were black and 27% were Hispanic. Homicide was the fourth leading cause of death among black males.
- *Domestic Violence.* In 1995, 8.9 per 1,000 couples or 12,229 females age 16 and older were victims of family violence reported to Connecticut police, a 2.5% increase from 1994. In 1996, 2,637 or 14% of Connecticut's children were directly involved in situations in which one or both adults in their homes were arrested for cases involving family violence. Another 6,000 children (32%) were present in the home when a violent incident occurred, but were not directly involved. In 1995, 666 forcible rapes of females and 107 attempted rapes were reported to Connecticut police, and in SFY 1995-96, 1,084 rapes of women age 12 and over were reported to the Connecticut Sexual Assault Crisis Center.

- *Deaths and Injuries Due to Firearms.* Firearms cause nearly one of every five injury deaths in Connecticut. In 1994, 293 Connecticut residents were shot to death; 49% of the firearms deaths were homicides, 48% were suicides and 3% resulted from unintentional shootings. In 1994, 87% of the firearms deaths in Connecticut occurred to males. The firearms mortality rate for blacks was four times higher than for whites, and the risk of gun-related death was highest for the 15-24 age group. Connecticut's firearms mortality rate increased more than 50% from 1985-1994. The rate for blacks increased 91%, while the rate for whites increased 41%.

## INFECTIOUS DISEASES

*Infectious Diseases* presents data on selected communicable diseases of importance to public health in Connecticut. The diseases covered in this section are HIV/AIDS, primary and secondary syphilis, gonorrhea, chlamydia, measles, tuberculosis, Lyme disease, varicella, and certain foodborne diseases. Childhood immunizations, pneumococcal and influenza vaccination of the elderly, and invasive pneumococcal disease also are considered.

### HIV Infection and AIDS

- Acquired Immunodeficiency Syndrome (AIDS) is a life threatening state of immunodeficiency that is the usual end result of infection with the human immunodeficiency virus (HIV).
- After a steady climb since the beginning of the epidemic, the Connecticut crude AIDS incidence rate by year of diagnosis remained stable in 1994 and 1995. In addition, pediatric AIDS cases decreased each year from 1993-1995, and the HIV seroprevalence among childbearing women also decreased. Finally, the death rate in persons with AIDS dropped for the first time ever in 1996.
- Despite the positive trends, the magnitude and epidemiology of AIDS continue to pose a major challenge to prevention. In 1995, HIV infection was the leading cause of mortality for Connecticut residents aged 25-44 years, and overall, HIV infection was the seventh leading cause of death. One hundred fifty-nine of the 169 towns in Connecticut have had at least one AIDS case among their residents. While injection drug use remains the leading means of HIV transmission, heterosexual contact has become the next leading means of HIV transmission. Poor urban areas and racial/ethnic minorities continue to be disproportionately affected, with persons of Hispanic ethnicity making up an increasing proportion of all new cases.

### Sexually Transmitted Diseases

- *Primary and Secondary (P&S) Syphilis.* Syphilis is most infectious during the primary and secondary stages, and often goes unnoticed or is misdiagnosed. Untreated, it can cause debilitating nervous system disorders and death in both infected adults and newborns, and it is also a significant risk factor for HIV transmission. In 1996, the rate of P&S syphilis for Connecticut was 3.2 cases per 100,000 population. There was a 20% increase in number of cases from 1995, which was Connecticut's first increase since 1989. Between 1989 and 1995, P&S syphilis had fallen 92% from the 1989 high. In 1996, 89 of 103 cases occurred in Hartford County residents. The 1996 incidence rate in blacks was 2.8 and 61.6 times greater than the rates for whites and Hispanics, respectively.
- *Gonorrhea.* Gonorrhea is a major cause of pelvic inflammatory disease and infertility in women, and untreated infections can predispose to HIV transmission. The rate of gonorrhea per 100,000 Connecticut residents in 1996 was 103, a decrease of 17% from the 1995 rate and the lowest rate ever reported in Connecticut. From 1995 to 1996, levels of gonorrhea declined in the state's largest cities except New Haven, where it increased by 43%. The 1996 incidence rate of gonorrhea in blacks was 3.3 and 58 times the rates for Hispanics and whites, respectively.
- *Chlamydia.* Like gonorrhea, chlamydia also causes pelvic inflammatory disease and infertility in women, and untreated infection can predispose to HIV infection. Chlamydia first became reportable in the state in

1990, and reported cases declined each year from 1992 to 1996. From 1995-1996, chlamydia declined in the state's largest cities except New Haven, where it increased 41%. Most reported chlamydia infections are in women, reflecting efforts to screen and treat asymptomatic cases before they progress. From 1992 to 1996, the reported chlamydia infections were greater in blacks than in other racial/ethnic groups.

### Measles

Measles is a vaccine-preventable disease that is caused by a highly infectious virus. Complications of measles include pneumonia, encephalitis, and death. A national objective for the year 2000 is to reduce indigenous cases of measles to zero. Each year from 1980-1988, no more than 25 cases were reported in Connecticut. The number of cases increased in 1989-1990 to a total of 424 and an annual average case rate of 6.5 cases per 100,000, which was more than 15 times the annual average rate for the previous 10 years. A similar increase occurred nationally. A major factor underlying the increase was low immunization rates in pre-school children, particularly in urban areas. In 1991, the number of reported measles cases began to drop, and reached an all-time low in 1995 and 1996 of 2 cases per year.

### Tuberculosis (TB)

In 1996, 138 TB cases were reported in Connecticut, the lowest number ever reported and the fourth consecutive year of decrease. Since 1986, TB incidence has decreased at an annual average rate of 2%. Only 9% of 1996 cases have been documented as having HIV co-infection, the lowest percentage since HIV-TB co-infection became reportable in 1991. The decrease in TB and HIV-related TB is due primarily to aggressive prevention activities. High risk groups for TB in Connecticut include racial/ethnic minorities, especially those of Asian and African origin, residents of urban areas, and persons born outside the U.S. and its territories.

### Childhood Immunizations

Vaccination coverage rates for primary immunization series completion by age 2, reported for children in Connecticut in 1994 and 1995 were 86% and 85%, respectively, which approaches the national year 2000 objective of 90%. Monitoring of children enrolled in Medicaid managed care is also being done. Vaccination levels are low among urban residents of the state, among children who have delayed initiation of vaccination, among children who have moved into an area after birth (in-migrants), and among those whose parents have other indicators of poor utilization of or poor access to health care.

### Lyme Disease

Connecticut has had the highest reported rate of Lyme disease in the nation for the previous six years. Since the first full year of surveillance in 1988, Lyme disease incidence has increased in all areas of the state, particularly in Windham and Litchfield Counties. In 1996, the incidence of Lyme disease statewide was 94 cases per 100,000 population.

### Varicella (Chickenpox and Shingles)

Infection with varicella-zoster virus causes varicella (chickenpox) and shingles. It has assumed public health importance since varicella vaccine was licensed in early 1995. Chickenpox is still viewed as a benign disease of childhood against which vaccination is not needed; however, this is not the case. In Connecticut each year from 1991 to 1995, an average of 156 residents were hospitalized with chickenpox and 569 with shingles. In addition, each year between 1990 and 1994, an average of two state residents died because of chickenpox, and another 25 from shingles. Overall, blacks were 2.5 times more likely to be hospitalized with varicella than whites, and Hispanics were 4.1 times more likely. Since January 1, 1997, the

state Immunization Program has been making varicella vaccine purchased with federal funds available to vaccinate all infants without health insurance or enrolled in Medicaid.

### Invasive Pneumococcal Disease

The bacterium *Streptococcus pneumoniae* causes a wide range of infections, including pneumonia, otitis media, meningitis, and bloodstream infections. Invasive infections due to *S. pneumoniae* are among the most common serious bacterial infections in man. They are of public health concern because many are preventable with vaccine, they can occur in clusters in crowded settings, and because antibiotic-resistant strains of *S. pneumoniae* have recently emerged. During the first 12 months of active surveillance (March 1, 1995 through February 29, 1996), 801 cases of invasive pneumococcal disease were identified. Of 733 isolates, 16% were penicillin non-susceptible and 9% had high-level resistance. This is a 12-fold increase in penicillin non-susceptible *S. pneumoniae* and a 36-fold increase in high-level resistance from 1993. The rate of invasive pneumococcal disease was highest among those aged 0-4 years, those 65 years and older, and among blacks. Although the rate was lowest among whites, levels of penicillin-non-susceptible and penicillin-highly-resistant *S. pneumoniae* were much higher in whites than in other groups. No cases of penicillin non-susceptible or penicillin highly resistant *S. pneumoniae* were reported among Hispanics.

### Pneumococcal and Influenza Immunization in the Elderly

A national year 2000 objective is to increase influenza and pneumococcal vaccination levels to at least 60% for persons at high risk for influenza and pneumococcal disease, including those aged 65 years or older. In Connecticut in 1995, 62% of BRFSS respondents aged 65 and older reported getting a flu shot in the past year, which exceeded the national objective. Only 37% of respondents aged 65 and older reported they had received a pneumonia vaccination. This was a marked improvement over the 19% rate reported in 1993, though still far below the objective.

### Foodborne Diseases

Ingestion of food products contaminated with pathogenic infectious agents can lead to a wide range of health consequences with substantial mortality. Four relatively common foodborne bacterial pathogens with many health consequences are most commonly used for monitoring food safety: *Salmonella*, *Campylobacter*, *Escherichia coli* O157:H7 (referred to henceforth as O157), and *Shigella*. The year 2000 objective for infection rate was met in Connecticut in SFY 1996 for O157, but not for *Salmonella*. For salmonellosis, rates of illness were highest in children under age 10 years and adults aged 20-29 years and >80 years. Rates of illness in cases of shigellosis were highest among those aged <10 years and 20-29 years. The highest rates of O157 infections were observed in children under the age of 10. Annual incidence of infections was fairly constant from 1992 to 1996.

## ENVIRONMENTAL AND OCCUPATIONAL HEALTH

*Environmental and Occupational Health* focuses on environmental risks (air pollution, hazardous wastes, contaminated drinking water) and disease (lead poisoning in children); surveillance for birth defects; and job-related deaths, injuries, and diseases.

### Air Pollution

Year 2000 objectives include county attainment standards for ambient air pollution. In 1996, all eight counties in Connecticut were out of attainment for at least one of the six "criteria" air pollutants regulated by the U.S. EPA. The contaminant of most concern in Connecticut is ozone. All counties in

Connecticut did not meet the ozone standard. Other contaminants such as particulate matter and carbon monoxide were problems in more limited areas of the state. In 1996, in ozone non-attainment areas in Connecticut, an estimated 43,000 residents in high-risk age groups were at risk for pediatric asthma, 92,000 for adult asthma, and 188,000 for chronic obstructive pulmonary disease.

### Hazardous Waste Sites

Proximity to hazardous waste is associated with a small to moderate increased risk of some specific cancers, and increases in the risk of birth defects, neurotoxic disorders, leukemia, respiratory and sensory irritation, and dermatitis. More than 110,000 Connecticut residents live within one mile of the state's 15 federal Superfund sites (i.e., those that are on the National Hazardous Waste Priority List). Approximately 74,000 people have been exposed to site-related contaminants. The Superfund sites represent only a small fraction of the more than 500 state-listed sites, many of which have not yet been fully characterized.

### Drinking Water

There has been zero incidence of waterborne disease in Connecticut in the 1990's. The high quality of drinking water in Connecticut is maintained through a variety of regulatory activities and coordinated planning activities. All surface water supplies, for example, are filtered or are under order to do so, significantly reducing risk from waterborne disease. The national year 2000 objective for safe drinking water has been exceeded in Connecticut. In 1996, greater than 90% of Connecticut's population on community water supplies received drinking water in full compliance with the federal standards.

### Blood Lead Levels in Children

Childhood lead poisoning is one of the most common and preventable pediatric public health problems in the United States. Based on preliminary data, the prevalence of elevated blood lead levels of 10 µg/dL or greater among Connecticut children under age 6 was 6.2% during 1995. This figure is higher than the national estimate of 4.4% for this age group. The prevalence of children with elevated blood lead levels in Connecticut's urban areas was even higher than the Connecticut statewide or national figures. Urban areas also contain a larger share of the state's older housing and are more likely to contain lead-based paint in deteriorated condition. Based on preliminary data, the three towns with the highest prevalence of elevated blood lead levels for children less than 6 years of age were Bridgeport (22.1%), New Haven (18.0%), and Hartford (12.9%),

### Birth Defects Prevention Surveillance

Environmental and nutritional causes of birth defects have been postulated, but supporting data are limited. In Connecticut in 1992, the infant mortality rate due to birth defects was 1.7 per 1,000 live births. In contrast to the U.S. figures, this rate was highest for white births (1.8 per 1,000) followed by blacks (1.2 per 1,000), and others (0.7 per 1,000). There is no comprehensive national surveillance system for birth defects. DPH is developing a statewide surveillance system for birth defects.

### Occupational Deaths, Injuries, and Diseases

Connecticut's overall occupational fatality rate (2.3 per 100,000 full-time worker equivalents) for 1992-1995 was lower than the U.S. year 2000 target (4.0 per 100,000). However, the rate for the agriculture, forestry and fishing sector (22.5 per 100,000) exceeded the year 2000 target (9.5 per 100,000). Connecticut's construction sector had a lower rate (9.7 per 100,000) for the period than the year 2000 target (17 per 100,000). From 1992 to 1995, the most common types of workplace fatalities were transport incidents and assaults and violent acts. The occupational illnesses most reported were repetitive trauma disorders,

poisonings by toxic substances, skin diseases/disorders, and respiratory diseases/disorders. The number of reports increased each year because outreach efforts have made more physicians aware of the reporting requirements; however, the relative proportions of reports in each of the four major categories remained fairly stable.

## HEALTH SERVICES DELIVERY

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Connecticut's health care delivery system provides its residents with personal health care services from a wide range of facility providers including, but not limited to, school based health centers, community health centers, outpatient clinics, and physicians' offices for primary care services; free-standing and hospital-based outpatient surgical centers for diagnostic or minor surgical procedures; acute care hospitals for emergency care, routine outpatient, or inpatient services; long term care facilities for chronic care or rehabilitative services; and increasingly non-institutional settings, such as the home, for services ranging from intravenous infusion of medications to physical therapy. Utilization is dependent upon a variety of demographic, economic, and environmental factors. Promotion of high quality health care and services is guided by the licensure or certification of health care facilities and health care professionals. Connecticut still maintains a Certificate of Need program that regulates health care facilities with regard to new or expanded facilities or services, decreased or terminated services, and purchases of medical equipment.

### ACUTE CARE

- The number of hospital discharges as well as the number of days spent in a hospital declined from FFY 1991 to FFY 1995. The future need for acute care services indicates an overall service reduction, particularly for medical/surgical services, but a somewhat greater need for intensive services such as provided in intensive care, coronary care, or neonatal intensive care units.
- The top six leading causes of hospitalization in FFY 1995 were birth-related conditions, heart disease, digestive system disorders, mental health, cancer, and injuries.
- Females were hospitalized more often than males for cancer, chronic obstructive pulmonary disease, central nervous system disorders, and digestive system disorders. Males were hospitalized more often than females for heart disease, alcohol and drug abuse or dependence, and HIV/AIDS.
- Excluding birth-related conditions, adults aged 65 and over were the largest users of hospital services and they prevailed in nearly all the leading causes of hospitalization. Seventy percent of the hospitalizations for HIV/AIDS were persons aged 30-44; 50% of the hospitalizations for alcohol and drug abuse or dependence were 25-44; and the asthma hospitalization rate for children under age five was triple that of all other patients.
- Between Medicare and Medicaid, 50% of all hospitalizations and 60% of total hospital charges were publicly funded.

### LONG TERM CARE

- Provision of chronic care services is being provided not only in nursing home facilities, but also in alternative settings such as home care, assisted living, and adult day care settings.
- In FFY 1995, Connecticut's nursing facility residents were predominantly female (74%), the average length of stay was 2.2 years, and utilization increased markedly with age.
- The state's nursing facility bed capacity did not peak until 1994 even though a moratorium on newly licensed beds was established in 1991 to reduce nursing facility utilization. The proportion of rest home with nursing supervision (RHNS) beds, the lower intensity category of beds, to chronic care nursing home

(CCNH) beds declined by half since 1991, primarily due to federal reimbursement policies. With the overall trend toward lower intensity levels of care, a net undersupply will be created for RHNS beds by 2005.

## HOME HEALTH CARE SERVICES

Home health care services doubled from SFY 1991 to SFY 1995. Projections indicate that the need for services could double again by 2005.

## EMERGENCY MEDICAL SERVICES

The planning, development, and administration of the statewide EMS system is carried out by DPH. The EMS delivery system includes 276 prehospital care providers, 68% of which are volunteer ambulance companies and volunteer fire departments; nine hospitals are designated trauma facilities. Although a trauma registry exists, a statewide prehospital data collection system is still lacking.

## PRIMARY CARE SERVICES

- *School-based Health Centers.* From SFY 1991 to SFY 1996, the number of school-based health centers grew four-fold, the number of clients served increased nine-fold, and the number of visits increased by a factor of 12, in an attempt to provide access to primary and preventive health services for children. This translates into a three-fold real growth effect, because the increase in the number of visits was triple that of the number of centers.
- *Community Health Centers.* From SFY 1990 to SFY 1996, the utilization of community health centers has more than doubled. These facilities offer community-based, primary health care services to low income clients located in medically underserved urban or rural areas.
- *Ambulatory Services.* The State of Connecticut currently does not collect data regarding routine patient encounters with their doctors, nor data related to outpatient surgery performed in hospital owned or operated outpatient facilities, in free-standing ambulatory surgical centers, or in physicians' offices.
- *Health Workforce.* Although areas in Connecticut have been designated as Health Professional Shortage Areas, indicating that the ratio of the population to primary care physicians exceeds 3,000:1, data are not collected regarding the distribution of practicing physicians and other health professionals across the state.

## CONNECTICUT'S PUBLIC HEALTH PRIORITIES

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The public health priorities for Connecticut were chosen based on DPH's responsibility to provide certain basic, core public health programs, and the concepts of disease burden and modifiability. DPH identified 25 public health priorities for promoting the health of state residents.

### HEALTH STATUS PRIORITIES

1. Prevention and cessation of tobacco use
2. Reduction of the factors associated with intentional, unintentional, and occupational injury
3. Improvement in rates of breast, cervical, and colorectal cancer screening and follow-up
4. Improvement in rates of hypertension detection and control
5. Improvement in rates of diabetes monitoring and control
6. Improvement in diet and rates of blood cholesterol monitoring and control
7. Further determination and reduction of the factors associated with adverse pregnancy outcomes
8. Reduction of risky sexual behavior that leads to acquisition of HIV/AIDS, STDs, and unwanted pregnancy
9. Reduction of physical inactivity
10. Reduction of alcohol abuse
11. Reduction of illicit substance use and practices associated with transmission of infectious diseases

### HEALTH SERVICES PRIORITIES

1. Reinforce and strengthen the public health infrastructure
2. Focus resources on the collection, analysis, interpretation, and dissemination of health data and information for better monitoring of the health care delivery system
3. Promote the development of adequate programs and services for persons 65 years of age and older
4. Monitor the growth and development of managed care and its impact on the delivery and utilization of personal health care services
5. Expand access to affordable health insurance and primary and preventive health care services to the uninsured and underinsured

### ESSENTIAL PUBLIC HEALTH PROGRAMS

1. Infectious disease control
  - 1.1. Monitoring and control of all infectious diseases
  - 1.2. Investigation of outbreaks of infectious diseases and food poisoning
  - 1.3. Immunization programs
2. Health provider quality assurance
  - 2.1. Setting and enforcing standards for professional provider qualifications and provider and facility quality assurance
3. Environmental assurance
  - 3.1. Protection of food and water through the setting and enforcing of quality standards
  - 3.2. Lead abatement in housing and testing of children for blood lead levels
4. Health services assurance
  - 4.1. Setting and enforcing standards for preventive health care
  - 4.2. Assuring the provision of health care services to underserved populations
  - 4.3. Family nutrition programs

The health status priorities focus on reducing mortality and morbidity by targeting problems that are modifiable. The health service priorities focus on improving the quality and accessibility of the state's personal health services, and developing better health information. The essential public health programs support activities that assure protection from preventable environmental conditions and infectious diseases, and regulate personal health care standards.

Based on the issues and the priorities identified in the *Assessment*, DPH's policies and programs will emphasize those health conditions that are the most pervasive among our residents: cardiovascular and cerebrovascular disease, cancer, unintentional injuries, and the modifiable risk factors associated with them. These factors are tobacco use, diet and cholesterol, physical inactivity, and hypertension.

DPH is now in the process of allocating resources for public health action to four key areas addressed by the priorities:

- ◇ Cardiovascular disease
- ◇ Cancer
- ◇ Injuries
- ◇ Surveillance and monitoring

To maintain currency in its planning and priority-setting efforts, DPH will reassess the health status and health services of the state every two years. This biennial planning process is essential for setting meaningful policy and program direction for the Connecticut DPH in the future.

# CHAPTER 1

## INTRODUCTION

### PURPOSE

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As Connecticut approaches the year 2000, it faces many challenges. Connecticut is witnessing a dramatic change in the organization, delivery, and financing of personal health care services, a result of the development and expansion of managed care. This change carries with it the promise of greater efficiency at a reduced cost, but it also introduces the possibility of threats to the quality of care people receive and access to the health services they need. The cost of delivering services continues to increase, and this escalation burdens private employers and government alike by consuming more and more of the available resources. The number of uninsured is increasing, and the public health system, which traditionally provides a safety net for individuals, is straining under the pressure of competition for insured patients and no competition for the uninsured.

If difficult decisions need to be made about health priorities and the allocation of scarce resources, they need to be made based on quality information and analysis. It is the goal of this *Assessment* to provide these to state and local policy makers, planners, and the citizens of Connecticut.

Connecticut's last comprehensive state health plan, *Health, Connecticut...Looking Ahead, Planning Ahead*<sup>1</sup>, was published in 1986 to inform policy makers and the public about the health of Connecticut residents, the state's health care delivery system, the need for health services and programs, and their fiscal implications. The current document shares those objectives.

Chapters 1 and 2 of *Looking Toward 2000 - An Assessment of Health Status and Health Services* describe the infrastructure that protects the health and safety of the population and address the emerging issues facing public health. Chapters 3 and 4 provide an assessment of Connecticut's health status and components of the existing health service delivery system. Finally, Chapter 5 identifies the public health priorities for Connecticut in the next biennium.

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<sup>1</sup> Connecticut Statewide Health Coordinating Council. *Health, Connecticut...Looking Ahead, Planning Ahead, 1986-1990 State Health Plan*, Hartford: State of Connecticut, Department of Health Services, 1986: 236 pp.

## AUTHORITY FOR THE STATE HEALTH PLAN <sup>2</sup>

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In 1987, the Department of Public Health (DPH) was mandated by the legislature to be the lead agency for public health planning and to assist in the development of collaborative planning activities that respond to public health needs.<sup>3</sup> In 1993, a mandate was added for a multi-year state health plan to provide an assessment of the health of Connecticut's population and the availability of health facilities in the state.<sup>4</sup> According to the statute, the plan is to include policy recommendations regarding the allocation of resources and the determination of public health priorities.

By statute, the state health plan also serves as a benchmark in certificate-of-need (CON) decisions. CON ensures that the state's health care resources are allocated appropriately by requiring health care facilities to obtain a determination of public need before making major capital expenditures or adding or decreasing beds or services. CON decisions are required to refer to the relationship of a facility's request to the state health plan.<sup>5</sup> Toward this end, the Connecticut legislature designated the Office of Health Care Access (OHCA) to establish a statewide health facilities plan as part of the state health plan.<sup>6</sup> For this assessment, DPH operated under a Memorandum of Agreement with OHCA to complete the utilization study, presented in Chapter 4.

## WHAT IS PUBLIC HEALTH?

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Public health is an organized set of activities that protects and promotes the people's health. In 1920 public health was defined as "the science and art of preventing disease, prolonging life, and promoting physical and mental health and well-being through organized community effort for the sanitation of the environment, the control of communicable infections, the organization of medical and nursing services, the education of the individual in personal health, and the development of the social machinery to assure everyone a standard of living adequate for the maintenance or improvement of health."<sup>7</sup> Nearly 70 years later, the Institute of Medicine published *The Future of Public Health*<sup>8</sup> and defined the mission of public health to fulfill society's interest in assuring conditions in which people can be healthy.

Public health responds to the changing health care environment with the consistent goal to reduce premature deaths and the incidence of disease and disability in the population. The overall goal of disease prevention is shared among the public and private sectors, communities, and individuals. Disease prevention occurs on three levels: primary, secondary, and tertiary. Primary prevention reduces disease and injury incidence before they occur, through health promotion and protection measures. An example of primary prevention is an immunization program for healthy children. Secondary prevention identifies the risk factors associated with a disease or injury and attempts to "correct departures from good health as early as possible."<sup>9</sup> This level of prevention reduces the prevalence of disease and disability. Cancer screening is an example of a secondary prevention measure. Tertiary prevention measures focus on alleviating some of the

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<sup>2</sup> The complete text of statutes governing health planning activities in Connecticut is presented in Appendix A.

<sup>3</sup> Connecticut General Statutes, Department of Public Health, Chapter 368a, Section 19a-7, 1975-95.

<sup>4</sup> 1993 Connecticut Public Act 93-381.

<sup>5</sup> Connecticut General Statutes, Office of Health Care Access, Chapter 368z, Section 19a-637(a), 1973-1997.

<sup>6</sup> Connecticut General Statutes, Office of Health Care Access, Chapter 368z, Section 19a-634(b), 1973-1997.

<sup>7</sup> Winslow, C.-E.A.: The untilled fields of public health. *Science* 51 (January9):23-33, 1920.

<sup>8</sup> Institute of Medicine. *The Future of Public Health*. Washington: National Academy Press, 1988: 225 pp.

<sup>9</sup> Last, JM. Scope and Methods of Prevention. In: Last, JM, Wallace, RB, editors. *Maxcy-Rosenau-Last Public Health & Preventive Medicine*. East Norwalk: Appleton & Lange, 1992: 4.

effects on the population already symptomatic of disease and injury. An example of such measures is antibiotic treatment of wounds to prevent infection.

The substance of public health is organized through an infrastructure designed to prevent disease and injury, and promote health. To support this infrastructure, the Institute of Medicine defined three core functions of public health: assessment, policy development, and assurance. Assessment is the surveillance process that identifies public health threats and trends. Policy development is the decision-making process of selecting the most appropriate response to public health threats and trends. Assurance is pledging that the necessary services, including personal health services, for the protection of public health in the community are available and accessible to all persons. This assurance function is necessary to make sure that the community receives proper consideration in the allocation of federal and state as well as local resources for public health; and that the community is informed about how to obtain public health services.

Public health services include both population-based and personal services. Personal or direct health services involve a one-on-one interaction between a health care professional and a patient. Direct services address physical, mental, or social functioning of the individual and may be performed by health care professionals for the purpose of promoting, maintaining, and restoring health. These services include what most consider ordinary medical care, including inpatient and outpatient medical services, allied health services, drugs, laboratory testing, x-rays, and dental care. In contrast, the provision of population-based services is directly related to the provision of essential public health services. Population-based services are identified as interventions to alter the social and physical environment, to change health-related behaviors, or to reduce directly the risk of causing a health problem. These services are generally developed and available for an entire population of a community or the state rather than just for individuals. The State of Washington's health plan noted that "public health services are less visible and more difficult to understand than medical services. Overall, public health serves the community through education, sanitation, and regulation."<sup>10</sup>

Public health responsibilities and essential services were summarized in 1994 by the Essential Public Health Services Work Group convened by the U.S. Public Health Service, and endorsed by the American Public Health Association. The Work Group proclaimed the vision for public health is to see healthy people in healthy communities by means of promoting health and preventing disease. The document *Public Health in America*<sup>11</sup> identifies public health with the following responsibilities:

- Prevent epidemics and the spread of diseases;
- Protect against environmental hazards;
- Prevent injuries;
- Promote and encourage healthy behaviors;
- Respond to disasters and assist communities in recovery; and
- Assure the quality and accessibility of health services.

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<sup>10</sup> Washington State Department of Health. *Public Health Improvement Plan*. Olympia: State of Washington Department of Health, 1994: 12.

<sup>11</sup> Essential Public Health Services Work Group of the Core Public Health Functions Steering Committee. *Public health in America*. Washington, D.C.: American Public Health Association, 1994.

Essential public health services are also recognized to include the following:

- Monitor health status to identify community problems;
- Diagnose and investigate health problems and health hazards in the community;
- Inform, educate, and empower people about health issues;
- Mobilize community partnerships and action to identify and solve health problems;
- Develop policies and plans that support individual and community health efforts;
- Enforce laws and regulations that protect health and ensure safety;
- Link people to needed personal health services and assure the provision of health care when otherwise unavailable;
- Assure a competent public health and personal health care workforce;
- Evaluate effectiveness, accessibility, and quality of personal population-based health services; and
- Research for new insights and innovative solutions to health problems.

In order to meet these responsibilities and provide these services, public health requires a systematic approach to anticipate, control, and prevent disease and injury as well as diagnose and treat occurrences.

## CONNECTICUT’S PUBLIC HEALTH INFRASTRUCTURE

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Public health infrastructure refers to the federal, state, and local governments’ capacity to meet the basic responsibilities of preserving the health of the community. This represents “a basic governmental responsibility to represent and lead the community in assessing health status and needs, to develop public policies and priorities, to preserve health, and to assure that the community is responding appropriately.”<sup>12</sup> The public health infrastructure comprises federal, state, and local governments that provide surveillance, vital statistics, health information and education, epidemiological investigation, laboratory analysis, and administration.

Connecticut’s public health infrastructure relies on federal, state, and local support of the same overall goals to improve health status and assure the availability of appropriate health care to all residents. At the federal level, the public health infrastructure sets direction and policy while supporting implementation at the state and local levels. Table 1-1 presents examples of federal government agency support and direction for the public health infrastructure in Connecticut for various disease prevention programs.

DPH is the administrative agency leading the public health initiatives in the state. For example, DPH serves as the Title V agency, federally designated office for primary care, state federally designated office of rural health, federal agency for facility certification for Medicare, and the lead agency in HIV/AIDS initiatives. The responsibilities of other state agencies have indirect and direct effects on the health of our residents and are key participants in the public health infrastructure. Many state agencies administer health services, and seven agencies, other than DPH, provide direct health care services or contract for such services for their clients. For example, the Department of Correction contracts for medical, dental, and psychiatric services to incarcerated individuals.<sup>13</sup> Clinical services are also provided, either directly or through contractual agreements, to clients under the jurisdictions of the Departments of Children and Families, Education, Mental Health and Addiction Services, Mental Retardation, Social Services, and Veterans’ Affairs.

**Table 1 - 1  
Federal Support for Public Health Infrastructure in Connecticut**

Federal Agency	Selected Supported Programs

<sup>12</sup> American Public Health Association. *Healthy Communities 2000: Model Standards, Guidelines for Community Attainment of the Year 2000 National Health Objectives*, 3<sup>rd</sup> edition. Washington: American Public Health Association, 1991: 3.

<sup>13</sup> Regulations of Connecticut State Agencies, Department of Corrections, Section 18-81-10, 1979.

U.S. Dept. of Health & Human Services (DHHS), Centers for Disease Control & Prevention	Chronic disease prevention and control CT Coalition on breast and cervical cancer prevention Tobacco prevention and control
DHHS - Health Resources and Services Administration	State Office of Primary Health Care State Office of Rural Health Maternal and Child Health Block Grant Preventive Health Block Grant
DHHS - Health Care Finance Administration	Clinical laboratory improvements Medical facilities certification
DHHS - Agency for Toxic Substances and Disease Registry U.S. Dept. of Agriculture	Building state capacity for health assessment State capacity for educating health professionals Tuberculosis control
U.S. Environmental Protection Agency	Water supply supervision grant State lead program grants
U.S. Dept. of Housing and Urban Development	Lead-based paint abatement and hazard reduction
Social Security Administration	Vital statistics

Source: DPH, Office of Policy, Planning, and Evaluation

## CONNECTICUT'S LOCAL HEALTH INFRASTRUCTURE

Local health departments (LHDs) are critical providers of population-based essential public health services at the local level in Connecticut. These departments are governmental entities separate from DPH, but are linked by statute in several important ways: approval of appointments of directors of health by the Commissioner of Public Health; mandates to carry out critical public health functions in the areas of infectious disease control in the community, environmental health, etc.; legal authority to levy fines and penalties for public health code violations, and to grant and rescind license permits (such as for food services establishments or septic systems); and funding to carry out the full area of public health activities to improve the health of people in their jurisdictions. Municipal health authorities and districts must include in their responsibilities the enforcement of the state public health code as required by DPH. Often this is a difficult task with the wide variety of services needed and the limited municipal budget to pay for those services.

Each municipality<sup>14</sup> in Connecticut is served by a local health department or district. Local health departments, whether part-time or full-time, serve under the direction the municipal legislative body (i.e. Board of Selectpersons or Town Council) of the community served. Municipalities having a population of 40,000 or more for five consecutive years are required to be served by a full-time director of health.<sup>15</sup> In 1997, there were 69 part-time and 26 municipal full-time health departments. There were also 18 health districts serving 83 municipalities. A health district is a regional health department formed by two or more municipalities to provide full-time public health services. The health district serves under the direction of a board of directors representing the member municipalities. A summary of local health departments are shown in Table 1-2. A complete list of health departments and districts by municipality is presented in Appendix B. Map 1-1 illustrates the communities served by a local health department and those served by a health district.

**Table 1-2**  
**Local Health Departments and Districts**  
**Connecticut, 1997**

Description	State Total	Municipal Health Department		Regional Health District
		Part-time	Full-time	Full-time

<sup>14</sup> The Secretary of State's Office recognizes 169 municipalities and 8 boroughs in Connecticut. However, there are 178 distinct municipalities that are served by a local health department or district, comprising 170 cities and towns (including the city of Groton) and 8 boroughs.

<sup>15</sup> Connecticut General Statutes, Municipal Health Authorities, Chapter 368e, Section 19a-200(a), 1949-1995.

Number of departments	113	69	26	18
Number of municipalities	178	69	26	83
Estimated population	3,269,858	1,173,016	410,494	1,686,348
Percent of population served	100%	36%	12%	52%

Source: DPH, Local Health Administration, July 1, 1997; and DPH, OPPE, 1997 Population Estimates.

Local health departments are funded primarily with municipal appropriations, but they also receive state grants, federal grants, and private foundation moneys. In addition, they generate revenues from fees and licenses and the imposition of fines and penalties. State “per capita” funding is available to local health departments as long as program components found in “Basic Local Health Program”<sup>16</sup> are provided to the community. The 8 essential public health services provided through the local health infrastructure are health planning, communicable and chronic disease control, health education, environmental health services, community nursing services, nutrition services, maternal and child health services, and emergency medical services. In addition, municipalities must commit a minimum of \$1.00 per capita from the annual tax receipts for a health department to receive state “per capita” funds.

Local health departments are fiscally encouraged to form regional health districts. In 1997, a municipality with a full-time director of health can receive annual funding equal to \$0.52 per capita. Health districts are supported with greater annual incentives of \$1.78 per capita for member towns with a population less than 5,000 and \$1.52 per capita for member towns with a population greater than 5,000.<sup>17</sup> DPH budgeted over \$2.5 million for essential local public health services in FY 1998.<sup>18</sup>

Other participants in Connecticut’s local public health infrastructure are the service providers, often contracted by local health departments to operate outpatient clinics. A complete inventory of Connecticut’s public health “safety-net” providers is found in Appendix G. The workforce that directly serves the public (i.e., physicians, nurses, technicians) and the facilities where the services are provided also support the local health infrastructure. The workforce environment and analyses of service utilization in a variety of health care settings are discussed in Chapter 4.

<sup>16</sup> Regulations for Connecticut State Agencies, Connecticut Department of Health Services, Section 19a-76-4, 1983.

<sup>17</sup> Connecticut General Statutes, Municipal Health Authorities, Chapter 368e, Section 19a-202 and District Departments of Health, Chapter 368f, Section 19a-245, 1949-1995.

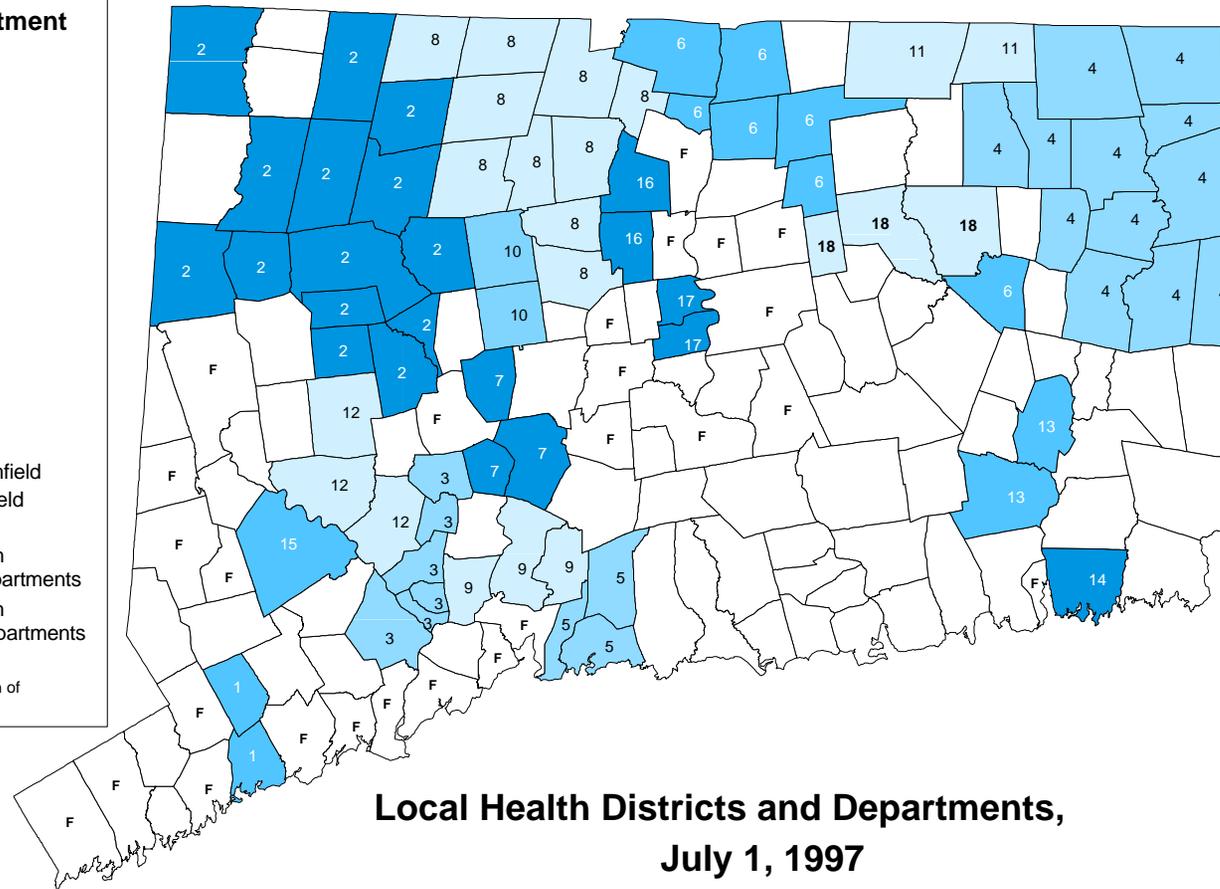
<sup>18</sup> Public Act 98-250 amended C.G.S. 19a to increase state funding to \$1.02 per capita for full-time municipal health departments. District health departments are eligible to receive \$2.09 per capita for each town, city or borough with a population of 5,000 or less, and \$1.79 per capita for municipalities with a population greater than 5,000. Part-time municipal health departments will receive \$0.53 per capita. Restrictions and regulations for eligibility and use of funds remain the same.

Map 1-1

**District\* or Department**

- 1 Weston-Westport
- 2 Torrington Area
- 3 Naugatuck Valley
- 4 Northeast
- 5 East Shore
- 6 North Central
- 7 Chesprocott
- 8 Farmington Valley
- 9 Quinnipiack Valley
- 10 Bristol-Burlington
- 11 Stafford
- 12 Pomperaug
- 13 Uncas Regional
- 14 Ledge Light
- 15 Newtown
- 16 West Hartford-Bloomfield
- 17 Rocky Hill-Wethersfield
- 18 Eastern Highlands
- F Individual Towns with Full-time Health Departments
- Individual Towns with Part-time Health Departments

\* Numbers are assigned in order of date of formation of health district



Source: DPH, Local Health Administration

## PUBLIC HEALTH PLANNING

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Connecticut utilizes population-based planning to assess health status, measure the availability of health services, and promote those services appropriate to the needs of state residents. Population-based planning concerns “the entire population of a designated region to specify the changes in existing resources needed to meet the health service requirements of that population.”<sup>19</sup> The focus of population-based planning from its inception in the 1930’s is the coordination of public health services to increase access to them.

The last DPH state health plan<sup>20</sup> addressed priorities in the areas of the evaluation of health status and Connecticut’s health care delivery system. Health status priorities included: wellness and health promotion initiatives; continuation of traditional local public health services; reduction of infant mortality rates, low birthweight births, and teen births; and continued development of the State’s capacity to protect its water supplies. Health care delivery priorities included: improved data capacity to monitor changes in the health care system; increased attention to planning for health services for the elderly; and the development of cost-effective, quality health care services. These priorities were reviewed in the 1989 DPH *Strategic Plan*<sup>21</sup> that served as a springboard for aggressive programs in high need areas. The consistent theme of the plan was a total commitment to address the unmet needs of Connecticut’s most disenfranchised citizens.

In 1987 Connecticut lawmakers established the Connecticut Community-Based Health Planning Program<sup>22</sup>, which focused on the assessment, policy development, and assurance of essential preventive and primary care services and on their relationship to public health issues and service needs. Major program goals were: 1) to develop community health planning capacities for assessing essential preventive and primary care services; and 2) to implement specific action strategies to improve the public’s health. The program focused on activities to improve access to both primary care and preventive health services, but was ended in 1990 due to Connecticut’s fiscal constraints.

Seven state agencies are involved with health planning to support the core functions of public health. They are DPH, OHCA, Department of Mental Health and Addiction Services (DMHAS), Department of Mental Retardation (DMR), Department of Children and Families (DCF), Department of Social Services (DSS), and the Office of Policy and Management (OPM). DMHAS prepared a “Substance Abuse and Mental Health Needs Assessment” which is presented in Appendix C. Health planning coordination and collaboration among agencies are encouraged by the legislature and the agencies, themselves. For example, the development of a strategic planning unit in DSS, DMHAS, DMR, and DPH is supported by legislation to centralize policy development and promote interagency coordination of health and human services.<sup>23</sup>

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<sup>19</sup> Rundall, TG. Health Planning and Evaluation. In: Last, JM, Wallace, RB, editors. *Maxcy-Rosenau-Last Public Health & Preventive Medicine*. East Norwalk: Appleton & Lange, 1992: 1080.

<sup>20</sup> Connecticut Statewide Health Coordinating Council.

<sup>21</sup> Connecticut Department of Health Services. *Summaries of Strategic Plans 1989 - 1992*. Hartford, 1992.

<sup>22</sup> Connecticut General Statutes, Department of Public Health, Chapter 368a, Section 19a-7, 1975-95.

<sup>23</sup> Connecticut General Statutes, Department of Social Services, Chapter 319o, Section 17b-6(b)(5), 1992.

## PLANNING FOR THE FUTURE

### Healthy People 2000

The most notable planning efforts on the national, state, and local levels are “Year 2000” initiatives with specific goals and objectives designed to improve health status and the public health infrastructure in the next century. *Healthy People 2000*<sup>24</sup> is a national strategy for improving the health of the American people that reflects a new appreciation for the prevention of illness and disability. *Healthy People 2000* places greater emphasis on health outcomes than on premature mortality, and has as its goals to (1) increase the span of healthy life for Americans, (2) reduce health disparities among Americans, and (3) provide access to preventive services to all Americans.

These goals are supported by 300 objectives that address 22 priority areas in health promotion and protection, preventive services, and data surveillance. A U.S. Public Health Service agency was designated to develop an implementation plan and to coordinate activities to achieve the objectives in each priority area. Appendix D contains a complete listing of priority areas and designated agencies. The Centers for Disease Control and Prevention (CDC) is responsible for health surveillance and for developing supporting data systems. As a result, CDC developed a set of 18 health status indicators (consensus indicators), to facilitate national, state, and local tracking of *Healthy People 2000* objectives and to help communities assess the general health status of their population. (Appendix D).<sup>25</sup>

### Healthy Connecticut 2000

Connecticut responded to the national initiative with the Healthy Connecticut project, which was a coordinated, internal review of *Healthy People 2000* and DPH’s three-year strategic plan to ascertain which specific objectives were being addressed through programs and which were not. By the end of 1992, DPH determined that the state was making progress in reducing the incidence of cardiovascular disease, infant mortality, AIDS, and other infectious diseases. However, the areas of cancer, violence, unintentional injuries, and diabetes required more attention.

The Healthy Connecticut project resulted in the 1992 DPH publication of the *Healthy Connecticut 2000 Baseline Assessment Report*.<sup>26</sup> The purposes of the effort are to: 1) describe our health status; 2) establish objectives; 3) provide a framework for policy development; 4) assist DPH in setting program priorities; 5) serve as a basis for health planning; and 6) enable Connecticut to remain competitive in obtaining federal funds for public health.

The *Healthy Connecticut 2000 Baseline Assessment Report* provides a framework for program planning, evaluation, policy development, and assurance. The report originally contained 112 objectives that focus on health status (to reduce death, disease, and disability) and risk reduction (to reduce the prevalence of risks to health). The objectives are divided into 18 priority areas that are listed with the national priorities in Appendix D. DPH recently completed a third set of objectives<sup>27</sup> known as services and protection objectives, which serve to increase comprehensiveness, accessibility, and/or quality of preventive services and interventions. These objectives serve to implement the health status and risk reduction objectives published in 1992.

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<sup>24</sup> U.S. Department of Health and Human Services. *Healthy People 2000: National Health Promotion and Disease Prevention Objectives*. Washington: U.S. Public Health Service, 1990: 692 pp.

<sup>25</sup> The U.S. Department of Health and Human Services has begun development of *Healthy People 2010 Draft Objectives* for review and comment. A final publication is due during the year 2000.

<sup>26</sup> Connecticut Department of Public Health. *Healthy Connecticut 2000 Baseline Assessment Report*, 1992: 250 pp.

<sup>27</sup> Connecticut Department of Public Health. *Healthy Connecticut 2000 Baseline Assessment Report Replacements and Additions*, July 1997.

## Performance Measurements

Performance measurements are being developed at the national and state levels as a management tool for documenting goals and objectives and the results from the investment in public health. Performance measurements respond to the increasing need to ensure the efficient and effective use of resources. At the federal level, performance measurements will support the Government Performance and Results Act of 1993<sup>28</sup> (GPRA) which requires the establishment of performance measures for programs. Under GPRA, federal agencies must submit an annual performance plan, beginning with the President's 1999 budget, that includes defined targets for performance goals, outcome indicators to measure progress toward the goals, a description of resources needed to meet the goals, a basis for computing actual program results with the goals, a discussion of the process for validating the data that are collected, and an acknowledgment of the role of other parties in meeting goals.

However, the performance measurement process for selected public health programs is intended to build on and strengthen the activities in *Healthy People 2000* and the Healthy Communities 2000 initiatives. The process is intended to develop performance measurements for public health programs in chronic disease, disability prevention, emergency medical services, HIV, sexually transmitted diseases, tuberculosis, immunizations, mental health, rape prevention, and substance abuse.

## Connecticut Benchmarks for the Year 2000

In support of the Year 2000 efforts, the Connecticut Progress Council published in 1995, the *State of Connecticut Goals and Benchmarks for the Year 2000 and Beyond* to establish broader community goals and objectives designed to measure Connecticut's progress in forming its future. Forty-one goals and 300 benchmarks were organized into five sections: individuals, families, and communities; education; health; the economy; and the environment. There were clear connections among goals and benchmarks of the different sections. The health goals emphasize the need for healthy lifestyles, reduced levels of violence, prevention, and equitable access to health care. Many of the 74 health benchmarks correspond with *Healthy Connecticut 2000* objectives. The Progress Council's health goals are:

1. All Connecticut residents will enjoy complete physical, mental and social well-being.
2. All Connecticut residents will be safe from injury and violence in their homes and communities.
3. All Connecticut residents will enjoy an environment that minimizes their exposure to unhealthy levels of toxic substances from food, air, and water in community and occupational settings.
4. All Connecticut residents will experience the rewards of pursuing exercise, nutrition, freedom from substance abuse and other aspects of positive health habits and lifestyles.
5. Illness and injury will be minimized by regular prevention-oriented research, education and health care.
6. All Connecticut residents will enjoy equitable access to the benefits of quality public health services and medical care.

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<sup>28</sup> Public Law 103-61. The Government Performance and Results Act of 1993. 8/2/93.

## Healthy Communities

Over the past decade, there has been increasing support at the national, state and local levels for healthy community initiatives. These initiatives focus on the need for community level interventions to improve the overall health and quality of life for communities by organizing the business, government, and health sectors to address local issues and needs. Policy-makers, providers, and consumers in health care have come to view health as an outcome, directly related to factors such as education, lifestyle, income, nutrition, and sanitation. The healthy community concept relies on personal and community responsibility for determining health status. The community often begins by developing a local needs assessment process. The assessment includes a traditional review of health status and available resources along with a look at related issues such as rising crime, depressed economies, and quality of health and education programs. The results contribute the information necessary for the stakeholders to develop policy and strategies that are tailored to the community's needs and resources. The policy consensus of a stakeholders' group promotes the unity of the community and allows the participants to work together to remove the obstacles to optimum health status. In addition, a collaborative intervention such as violence prevention programs through schools, police, and local health departments can be more cost-effective than each agency supporting independent programs.

In support of the healthy communities initiatives, the Joint Commission on Accreditation of Health Care Organizations (JCAHO) has updated their quality of care standards to include service planning in response to community needs.<sup>29</sup> This action has brought the hospitals into a more active role in community health planning. Many healthy communities initiatives exist in Connecticut. Some of the efforts were initiated by local hospitals in response to accreditation requirements, and others arose from local health departments in response to *Healthy People 2000*. It appears that, regardless of the impetus, the communities are willing to take responsibility for assessing overall health status and combining efforts to address the needs identified. Collaboration in both assessment and policy development brings a two-fold benefit to the community - a documentation of need and a council of representatives already in place to address future changes and needs in the community. A summary of selected healthy community initiatives in Connecticut is presented in Appendix E.

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<sup>29</sup> Joint Commission on Accreditation of Healthcare Organizations. *Comprehensive Accreditation Manual for Hospitals The Official Handbook*. Washington, D.C. : 1996: LD8-LD12.

# CHAPTER 2

## EMERGING ISSUES

### INTRODUCTION

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While trying to resolve long-standing health issues, public health must also be prepared to address new concerns. The most reliable guide to predicting future developments in health is a careful examination of current trends in society and progress in research.<sup>1</sup> As noted in Chapter 1, essential public health services include the monitoring of health status and health services while searching for innovative solutions to health problems. The Institute of Medicine stated that the approach to public health in the U.S. has too often been driven by crisis; a more costly approach than instituting preventive measures before the crisis breaks.<sup>2</sup> Such an approach also ignores the contribution prevention can make to the public's overall health, quality of life, and productivity.

Emerging health issues are those that pose either a threat or relief from threat to the overall health of the population. An emerging issue can be a disease or injury that has either increased incidence or prevalence in the past decade or threatens to increase in the near future. It can also be a "horizon issue" that has just begun to develop in our society and the future public health effects of which are uncertain. Finally, it can be an increased visibility in a long-standing health issue that continues to obstruct the public health goal of reducing death and disability.

The emerging issues affecting health status reflect the dramatic changes in our society and environment. Personal and population health status are broadly defined to include the physical environment (e.g. air and water); the socio-economic environment (e.g. poverty, age); the personal health habits of the population (e.g. smoking, use of seat belts); and the presence of disease and injury. Each of these areas evolves and affects the overall health status of the population. Connecticut and the nation are seeing increases in the population aged 65 and older, implementation of welfare reform which affects poverty rates, increasing levels of urban violence, and greater exposure to new infections.<sup>3</sup> Public health responds to these changes with surveillance to monitor the changes, research for innovative solutions to health problems, and policies to address the changing health environment. There is a national effort, for example, to update *Healthy People 2000*<sup>4</sup> to develop objectives for the year 2010 which affect positive change in health status.

This chapter explores emerging issues that concern public health today. Issues related to the health of the population include the emergence of new AIDS treatments, the changing epidemiology of sexually transmitted diseases, tuberculosis, asthma, women and heart disease, and obesity in children. Emerging environmental issues include exposure to secondary tobacco smoke, recent tobacco litigation, foodborne diseases, and blood lead levels in children. The long-standing family health issues of infant mortality and child nutrition are also considered, because of their potential to cause future declines in health status.

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<sup>1</sup> Lawrence, RS. Future of Health Promotion and Disease Prevention in Clinical Practice and in the Community. In: Woolf, SJ, Jonas S, Lawrence, RS, editors. *Health Promotion and Disease Prevention in Clinical Practice*. Baltimore: Williams & Wilkins, 1995: 569.

<sup>2</sup> Institute of Medicine. *The Future of Public Health*. Washington, D.C.:National Academy Press, 1988: 225pp.

<sup>3</sup> U.S. Department of Health & Human Services, Public Health Service, Centers for Disease Control and Prevention. *Addressing Emerging Infectious Disease Threats A Prevention Strategy for the United States*. Atlanta: 1994: 46pp.

<sup>4</sup> U.S. Department of Health and Human Services. Public Health Service *Healthy People 2000: National Health Promotion and Disease Prevention Objectives*. Washington: U.S., 1990: 692pp.

Emerging issues in the health care delivery system focus on the financing mechanisms for personal health services and the lack of sufficient services for the uninsured and the growing elderly population. Connecticut is part of the national trend in the delivery of personal health services with the expansion of managed care as the dominant organizational form. These new methods of financing affect the availability and delivery of services and the quality of patient outcomes, with the promise, but not the guarantee, of greater efficiency.

## EMERGING ISSUES IN HEALTH

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### INFECTIOUS DISEASES

At least three dynamic areas concerning infectious disease need to be anticipated in planning for disease control and prevention. They are: 1) the use of new tools for preventing infectious diseases; 2) the changing epidemiology of diseases currently under surveillance; and 3) antibiotic resistance in bacterial pathogens.

#### Tools for Preventing Infectious Diseases

##### *Antiviral Agents*

HIV can be transmitted from an infected pregnant mother to her child; however, antiviral agents such as AZT are highly effective in preventing perinatal HIV transmission. Although the rate of infants born to HIV-infected mothers is decreasing, the extent to which antivirals are being used in Connecticut still needs to be assessed. An active outreach program to assure that all HIV-infected pregnant women are identified and counseled to take antiviral therapy during pregnancy therefore merits consideration.

##### *Vaccines*

Vaccines are one of the most cost-effective public health prevention measures. Several new vaccines recently have been licensed for use, and more new ones are expected. Varicella-zoster virus (chickenpox, shingles) results in an average of 12 deaths and 725 hospitalizations in Connecticut each year.<sup>5</sup> Because varicella vaccine has been available only since 1995, many susceptible children and adolescents still have not been vaccinated. Since January 1, 1997, the Department of Public Health (DPH) has made federally purchased varicella vaccine available to the uninsured and to all Medicaid enrollees. Surveillance is now needed to evaluate the effectiveness of vaccination programs and prevention strategies and to monitor expected long term changes in the epidemiology of the disease. If necessary, steps may need to be taken to assure that varicella is fully integrated into the routine infant vaccination schedule.

Pneumococcal disease (pneumonia, meningitis, bacteremia, otitis media) is currently second only to AIDS as an infectious-agent-specific cause of death in Connecticut. Persons at increased risk include young children, the elderly, and immunocompromised persons. The problem is compounded by the rapid increase in antibiotic resistant pneumococcal bacteria, *Streptococcus pneumoniae* (see "Antibiotic Resistance" below). A vaccine for the 23 most common serotypes of *S. pneumoniae* has been available since the early 1980's but remains underutilized. Pneumococcal vaccine usage needs to be assessed and steps taken to promote more widespread use, especially as drug-resistant pneumococci become more prevalent.

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<sup>5</sup> Connecticut Department of Public Health, Infectious Diseases Division.

Hepatitis A (infectious hepatitis) is spread by the fecal-oral route as a result of poor sanitation practices, and transmission from infected food handlers is a significant public health problem. There were 135 reported cases of hepatitis A in Connecticut in 1996, up from 86 in 1995.<sup>6</sup> A safe and effective hepatitis A vaccine was licensed recently but is not yet used widely. We need to consider promoting its use among food handlers and others at risk (children in daycare centers, travelers to countries where the disease is endemic). To promote its use effectively, an active role in providing the vaccine may need to be considered.

Vaccines against rotavirus gastroenteritis and against Lyme disease are currently in the clinical trial phase, with licensing possible before the year 2000. The incidence of reported tickborne Lyme disease in Connecticut almost doubled between 1995 and 1996, and Connecticut continues to have one of the highest infection rates in the nation. Rotavirus infection is the major cause of hospital-acquired diarrhea of newborns, infants, and children under age 5.

#### *National Prevention Initiatives*

Both foodborne illness and invasive Group B streptococcal disease have been targeted by the Center for Disease Control (CDC) for intensive surveillance to determine their magnitude and public health impact, as part of the national response to emerging infections. Group B streptococcal disease is the most common cause of meningitis and bloodstream infection (septicemia) in infants and children. From 1992 to 1996 more than 4,700 cases of foodborne infections due to *Salmonella*, *E. coli*, and *Shigella* bacteria were reported in Connecticut, and in 1995 septicemia was the fifth leading cause of death of Connecticut children aged 1-4. As a national sentinel site for emerging infections surveillance, Connecticut needs to consider special efforts to assess and promote prevention of these two groups of infections.

### Changing Epidemiology of Tuberculosis and Sexually Transmitted Diseases

#### *Tuberculosis (TB)*

During the past 10 years, tuberculosis in persons born and latently infected in high incidence areas of the world has become the greatest challenge to TB control in Connecticut. The incidence of TB in this group and its proportional contribution to morbidity in our state has risen steadily since 1980, and 50% of all cases now occur in those born outside the U.S. Strategies and efforts are needed to 1) identify shortly after their arrival in Connecticut those visitors who intend to stay in the U.S. for more than a few months; and 2) to screen them with tuberculin and give preventive treatment to those with latent TB infection.

#### *Sexually Transmitted Diseases (STDs)*

Although the incidence of STDs (primary and secondary syphilis, gonorrhea, and chlamydia) has decreased in most of Connecticut during the past 5 years, rates remain high in urban areas, especially Hartford, and among minorities, especially blacks. In addition to their own pathologies, STDs are important because their presence facilitates the transmission of HIV. To reduce the risk and direct cost of STDs and to decrease their contribution to HIV transmission, more intensive and effective efforts targeting minority groups are needed in urban areas, especially Hartford.

#### *Antibiotic Resistance*

As noted above ("Vaccines") pneumococcal disease is currently second only to AIDS as an infectious-agent-specific cause of death in Connecticut. Between 1993 and 1995, however, there was a 36-fold increase in high-level penicillin resistance in *Streptococcus pneumoniae*, which causes pneumococcal disease, and a 12-fold increase in the number of bacterial isolates that were not susceptible to penicillin. Another type of bacteria, vancomycin-resistant enterococci, is the most antibiotic-resistant of all known bacterial

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<sup>6</sup> Connecticut Department of Public Health, Infectious Diseases Division.

pathogens. Between 1994 and 1995, the number of infections due to it in Connecticut nearly doubled, from 58 to 104.<sup>7</sup>

The emergence of such drug-resistant bacteria presents a challenge to both the medical and public health communities; more judicious use of antimicrobial agents in both community and hospital settings and wider use of the existing vaccine against *S. pneumoniae* will be needed to control the increase of drug-resistant bacteria. We also need to address whether current surveillance for antibiotic-resistant bacteria is appropriate, and to consider taking steps to try to slow their development through initiatives to reduce the overuse of antibiotics.

## HIV Infection and AIDS

### *Impact of new medications*

Over the last eighteen months, several new medications for HIV infection have come on the market. These medications fall into two main categories: protease inhibitors and non-nucleoside reverse transcriptase inhibitors (NNRTIs). Anti-HIV drugs, like azidothymidine (AZT), block enzymes that the HIV virus needs to reproduce itself, the protease inhibitors do so late in the reproductive cycle, and NNRTIs do so in the early to middle stages of the reproductive cycle. By combining these antiviral drugs, it is less likely that the HIV virus will develop a resistance to the drugs, as has been the case with AZT. Consequently, the protease inhibitors and NNRTIs, commonly referred to as “AIDS cocktails”, hold the promise of lengthening the life of people infected with HIV.

Little is known, however, about the effect of the availability of the new medications on the risk behaviors of those infected, and of those who are not infected but engage in risky behaviors. In a survey at the University of California at San Francisco, 26% of the 54 HIV negative gay men surveyed indicated that they were less concerned about being HIV positive because of the new drug therapies. In addition, 15% of the gay men said that they had already engaged in risky sex because they were less concerned about the danger of getting infected due to the new medications.<sup>8</sup> Research is needed to ensure that prevention programs remain responsive to changes in risk behaviors.

Antiviral drug combination therapy increases the likelihood of a course of illness for HIV infection similar to that of a long term, chronic, potentially disabling illness. This will affect the health care and social service systems, especially those financed with public funds. For example, the AIDS Drug Assistance Program, funded primarily by DPH using federal funds and operated by the Department of Social Services (DSS), will be unable to continue serving all eligible clients unless significant new funding is received, since with the new therapies each client is likely to remain on the program for a substantially longer period of time than previously. The expected increase in life span will also have a similar impact on the Ryan White Case Management Program, which is funded by the federal government through local agencies. New initiatives may be needed, such as a Medicaid waiver to allow people with HIV infection to continue receiving publicly-funded medications that keep them healthy enough to work, even though working would otherwise make them financially ineligible for the funds for the medication.

### *New technologies for HIV testing*

A newly developed home collection kit allows a person to collect a sample of blood and mail it in for an HIV test. Rapid, 15-minute blood tests, are already available in many countries, and are likely to be licensed in the U.S. in a few years. Whether these tests are used at home or in a medical setting, they could

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<sup>7</sup> Connecticut Department of Public Health, Infectious Diseases Division.

<sup>8</sup> Connecticut Department of Public Health, Infectious Diseases Division.

affect the current system of HIV testing and counseling the entry of infected individuals into medical treatment.

### *Perinatal HIV Transmission*

Approximately 90 HIV-infected women give birth each year in Connecticut.<sup>9</sup> Of these, up to 25% may be infected without intervention. With treatment during pregnancy, birth, and in the first 6 weeks of the infant's life, transmission can be decreased by two-thirds. A new outreach approach similar to that used with Hepatitis B is being considered by DPH, whereby infected women are educated about, and offered, appropriate treatment to avoid infecting their children. Various funding and programmatic issues, particularly those related to confidentiality, need to be addressed before the approach can be implemented.

## CHRONIC CONDITIONS AND RISK REDUCTION

### Injuries: Youth Violence

The serious nature of injuries is reflected in its status as the leading cause of death for individuals below 35 years of age. There is an emerging concern in communities across the country regarding injuries resulting from youth violence. The majority of violent crimes are committed by teenagers and young adults, and these youths represent a disproportionate share of the victims.<sup>10</sup>

After declining in the early 1980s, the homicide rate in Connecticut doubled between 1985 and 1994. By 1994, an average of four Connecticut residents died each week from homicide. Persons aged 15-24 accounted for 12% of the Connecticut population and 42% of all homicide victims in 1994. This same age group represented 37% of all firearms deaths. Another violent injury affecting youth is suicide, which ranks eleventh as a cause of death in Connecticut. Suicide ranks sixth in terms of premature deaths, reflecting the younger average age of suicide victims. The results of a 1995 survey of high school students found that 24% of Connecticut high school students had seriously considered suicide within the past year.<sup>11</sup>

The public's health and well-being are threatened by violence, and public health agencies are responding to youth violence through injury prevention initiatives. A public health approach to youth violence requires an assessment of its extent, in terms of injuries, disabilities, and deaths, and the associated risk factors. The development of prevention programs and policies focuses on the modifiable behaviors that contribute to violent crime. Risk factors associated with homicide and suicide include a history of psychological, physical, or sexual abuse; lower socio-economic status; racism; living in overcrowded conditions; and emotional or physical disabilities. Chapter 3 presents a detailed review of unintentional and intentional injury mortality by race, age, and sex.

### Obesity

Obesity among Connecticut residents is increasing. It is the only risk factor consistently measured on the Behavioral Risk Factor Surveillance Survey (BRFSS) that has clearly worsened in Connecticut since 1989. Approximately 26% of children aged 6-17, 33% of men, and 36% of women are overweight.<sup>12</sup> Since 1970 the overweight population has increased by 3% for children, 5% for adolescents, and 6% for adults.<sup>13</sup>

<sup>9</sup> Connecticut Department of Public Health, Infectious Diseases Division.

<sup>10</sup> Connecticut Department of Public Safety. *Crime in Connecticut, 1996 Annual Report*. Hartford, CT: Division of Connecticut State Police. 1996: 101pp.

<sup>11</sup> Connecticut Department of Education. *1995 Youth Risk Behavioral Survey Report*. Hartford, CT. 1996.

<sup>12</sup> The national health and nutrition examination survey III (NHANES 1991-94). *Morbidity and Mortality Weekly Report*. 1997;46:199-202.

<sup>13</sup> The national health and nutrition examination survey III (NHANES 1991-94). *Morbidity and Mortality Weekly Report*.

Eighty percent of obese adolescents become obese adults.<sup>14</sup> Therefore, primary prevention of obesity should target children and their care providers with guidance for healthy, age-appropriate food behaviors and early physical activity, while avoiding the development of anorexia nervosa or other eating disorders.

Obesity prevalence in Connecticut is 24%<sup>15</sup>, and has been increasing since 1989, following a national trend. Obesity is related to age, with the prevalence increasing up to 64 years of age; 37% of adults between the ages of 55 and 64 are obese. If obesity continues to increase with age, the numbers will be affected by the baby boomers when they reach the 55-64 age category. Obesity is also more prevalent among certain race/ethnic groups, with non-whites, especially blacks, having rates significantly higher than non-Hispanic whites. The prevalence of obesity among the 138 blacks surveyed in the 1995 BRFSS was over 40%.

Obesity is a risk factor for heart disease, stroke and high blood pressure; colon, breast, and prostate cancer; and diabetes. Death due to coronary heart disease is associated with obesity at the upper range of body weight (i.e., a relative weight of 140% or greater, or a body mass index greater than 30).<sup>16,17</sup> The prevalence of high blood pressure and diabetes is three times greater among overweight people than among those of normal body weight.<sup>18</sup> Half of all type II diabetes (non-insulin-dependent diabetes mellitus) is estimated to be preventable by obesity control.<sup>19</sup>

Obesity and diet contribute to an estimated 3,217 deaths in Connecticut, or 11% of all deaths.<sup>20</sup> The combined risk factors of poor diet and sedentary lifestyle are estimated to contribute to 14% of all deaths each year.<sup>21</sup> In 1994, only 33% of Connecticut adults consumed the recommended five or more servings of fruits and vegetables each day, significantly below the *Healthy People 2000* objective of 100%.

Physicians can play an important role in decreasing the prevalence of this risk factor. A recent study indicated that only 29% of overweight patients were counseled by their physicians to lose weight, but when they were, the overweight were much more likely to try to lose weight.<sup>22</sup> A more detailed discussion of obesity can be found in Chapter 3.

#### Hemochromatosis (Iron Overload Disease)

Hemochromatosis is the excessive storage of iron in the body and, until recently, had been thought rare, but new information shows that it affects at least one in 300 individuals.<sup>23</sup> The CDC is expected to publish pioneering new iron overload screening and treatment recommendations soon.<sup>24</sup> These draft guidelines state that the chronic excess iron accumulation often leads to severe organ damage, arthritis, cirrhosis, diabetes, heart disease, or psychological and sexual dysfunction. The strategy for prevention is the screening of adults for hereditary hemochromatosis during routine medical encounters.

Providers and the public need to be informed about these new guidelines, because screening may identify more than 10,000 individuals with this condition in Connecticut. Treatment involves periodic blood

<sup>14</sup> U.S. Department of Health and Human Services, Public Health Service, Health Resources and Services Administration, Maternal and Child Health Bureau. Executive Summary: *Promoting Healthy Weight Among Children*. Washington, D.C.:1995 December.

<sup>15</sup> Connecticut Department of Public Health. *Behavioral Risk Factor Surveillance System*. 1995.

<sup>16</sup> Kris-Etherton PM, ed. *Cardiovascular Disease: Nutrition for Prevention and Treatment*. Chicago, Ill.: American Dietetic Association, 1990.

<sup>17</sup> National Research Council. *Diet and Health: Implications for Reducing Chronic Disease Risk*. Washington, DC: National Academy Press, 1989.

<sup>18</sup> Fisher M, Eckhart C, eds. *Guide to Clinical Preventive Services: An Assessment of the Effectiveness of 169 Interventions. Report of the US Preventive Services Task Force*. Baltimore, MD: Williams & Wilkins, 1989.

<sup>19</sup> Herman WH, Teutsch SM, Geissm LS. Diabetes mellitus. *American Journal of Preventive Medicine*. 1987;3(suppl):72-82.

<sup>20</sup> Hahn, RA, Teutsch, SM, Rothenberg, RB, Marks, JS. Excess deaths from nine chronic diseases in the United States, 1986. *Journal of the American Medical Association*. 1990;264:2654-2659.

<sup>21</sup> McGinnis & Foege. Actual causes of death in the United States. *Journal of the American Medical Association*. 1993;2207-2212.

<sup>22</sup> Nawaz H, Adams ML, Katz DL. Pattern and impact of weight management counseling by physicians. Submitted to *American Journal of Preventive Medicine*. 1996.

<sup>23</sup> U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control. *Draft Recommendations for the Prevention and Management of Iron Deficiency and Iron Overload*. Washington, D.C.: 1996.

<sup>24</sup> U.S. Department of Health and Human Services.

donation, and is safe, cheap, and effective. Targeting high-risk individuals and males over age 20, who may not have insurance, can reduce morbidity and reduce future health care costs.

### Asthma<sup>25</sup>

Asthma is a chronic, inflammatory disorder of the airways. In susceptible individuals, this inflammation causes recurrent episodes of wheezing, breathlessness, chest tightness, and coughing, particularly at night or in the early morning. The episodes are associated with widespread but variable airflow obstruction that is often reversible either spontaneously or with treatment. Over the past decade asthma fatalities have increased 80% and now account for 4,000 deaths per year nationally.

Asthma is the most common chronic disease of childhood, affecting an estimated 5 million children under the age of 18. Hospitalizations among this group have increased 36% in the past decade. Among children aged 5-14, the asthma death rate nearly doubled from 1980 to 1993.<sup>26</sup> Aside from the medical costs, asthma affects the quality of life by limiting school and work attendance, occupation choices, and physical activity. Asthma accounts for 10 million missed school days per year. In 1990, over \$6 billion was spent for asthma-related health care. If no intervention occurs, that cost will more than double by the year 2000.

Deaths and hospitalizations from asthma are considered largely preventable. Asthma is amenable to public health intervention, including those reducing occupational exposures, tobacco smoke, household allergens, ambient ozone, and dust. Most states, including Connecticut, have inadequate data to define the distribution of asthma. Such data are critical to begin intervention. Initial steps have been taken to establish a data base to allow for analysis of asthma in our state.

### Genetic Research

One trend with significant implications for disease prevention and health promotion is stimulated by advances in genetic research with molecular medicine. Creating a map of the human genome is one of the goals of the international Human Genome Project funded by the National Institute of Health and the Department of Energy. Genes play a major role in human health and disease, and mapping the 50,000 to 100,000 genes that compose the human genome will enhance prediction of potential future health. As of mid-1996, more than 6,000 genes had been mapped.<sup>27</sup> Knowing locations and functions of genes helps scientists to understand how they may mutate, and subsequently, cause diseases. In turn, this may lead to better diagnoses and treatments, potentially using gene therapy.

Researchers have already mapped *single* genes associated with diseases, such as cystic fibrosis, Huntington's disease, Duchenne muscular dystrophy, neurofibromatosis, and retinoblastoma. Genetics have been implicated in many major disabling and fatal diseases including heart disease, stroke, diabetes, and several kinds of cancer.<sup>28</sup> However, the majority of diseases are not related to single genes, but rather are caused by multiple genes or by a combination of genetic and environmental factors. For example, several different genes may play a role in triggering diabetes, in combination with environmental and lifestyle factors, such as diet or viruses.<sup>29</sup> Such diseases are much more difficult to understand than those associated with single genes.

Two genes, called BRCA1 (1994) and BRCA2 (1995) are involved in a high proportion of "inherited" breast cancers, but only about 5 to 10% of breast cancer cases may be inherited.<sup>30</sup> More than

<sup>25</sup> American Public Health Association. Fact sheet on asthma. May 30, 1997.

<sup>26</sup> U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention. *Mortality and Morbidity Weekly Report*. May 3, 1996: Vol. 45, #17.

<sup>27</sup> Jaroff L. Keys to the kingdom. *Time*, 1996 Fall;147(14):24-29.

<sup>28</sup> Impact of the human genome project. [www.gdb.org/Dan/DOE/prim5.html](http://www.gdb.org/Dan/DOE/prim5.html).

<sup>29</sup> Diabetes and genetic risk factors. [www.ncgr.org/gpi/odyssey/diabetes](http://www.ncgr.org/gpi/odyssey/diabetes).

<sup>30</sup> Family history of breast cancer. *International Journal of Cancer*. 1997;71:800-809.

200 different mutations in the two BRCA genes may confer different risks of breast cancer; moreover, the same mutation can have different effects in different women. Such circumstances underscore the role of modifying factors, whether genetic or environmental, in determining whether a given BRCA mutation causes cancer. The lifetime risk of developing breast cancer for women with a BRCA gene mutation is high, but not precisely known. Studies have suggested that the risk of developing breast cancer for women with just one BRCA gene mutation is 85%. More recent studies, however, based upon a broader population of women, indicate that the risk is only 56%.<sup>31</sup> Understanding the genetics of human breast cancer has potential for prevention and treatment. It affects the care of individual patients, particularly those “carriers” of mutated genes who opt to have prophylactic mastectomies to reduce the risk of developing breast cancer.

The growing population aged 85 and older highlights the need to address many problems associated with aging. Future progress is likely to be associated with advances in medical genetics with the potential to affect healthy aging. For example, genetic factors play a role in the onset of Alzheimer’s disease, the prevalence of which may approach 50% among persons aged 85 and older.<sup>32</sup> In Connecticut, Alzheimer’s disease was the eighth leading cause of death for the 85+ population in 1995.<sup>33</sup> Efforts are underway to identify the environmental causes of and diagnostic markers for Alzheimer’s disease, particularly because, like heart disease and cancer, it may begin early and be a lifelong disease process,<sup>34</sup> and pharmaceutical companies hope to identify the genetic foundations of asthma and then develop drugs that will prevent the development of symptoms.<sup>35</sup>

The practice of medicine is on the verge of a significant transformation enhanced by daily genetic discoveries. One of the challenges affecting the nation’s future health will be “to assess the impact and potential of genetic advances.”<sup>36</sup>

### Heart Disease in Women

Cardiovascular disease<sup>37</sup> (CVD) is an important women’s health problem and will continue to be the leading cause of death in women for the foreseeable future. Heart disease is the number one killer of American women.<sup>38</sup> Every year an estimated 485,000 American women die of CVD, more than twice the number who die of all forms of cancer combined.<sup>39</sup> Of the CVDs, heart disease kills an estimated 245,000 women annually, five times the number who die of breast cancer and nearly half (49%) of the total heart disease deaths that occur each year.<sup>40</sup> An estimated 20,800 women under the age of 65 die of heart attacks each year; over 29% of them are under the age of 45. Black women have a 33% higher death rate from coronary heart disease than white women and a 77% higher death rate from stroke. Nearly 24% of women ages 20 and older have high blood pressure, a major risk factor in coronary disease and stroke.<sup>41</sup>

In 1994, CVD was listed as a principal or secondary diagnosis in 71,900 women’s hospitalizations, about 19% of all hospitalizations in Connecticut. Women aged 65 years or older accounted for 74% of women’s hospitalizations with CVD as the principal diagnosis and diabetes listed as a secondary diagnosis.<sup>42</sup>

<sup>31</sup> Healy, B. BRCA genes -- Bookmaking, fortune telling, and medical care. *New England Journal of Medicine*. 1997;336:1448-9.

<sup>32</sup> The Alzheimer’s Disease and Genetics Information Directory. [www.ncgr.org/gpi/odyssey/alzheim/](http://www.ncgr.org/gpi/odyssey/alzheim/)

<sup>33</sup> Connecticut Department of Public Health, Office of Policy, Planning, and Evaluation.

<sup>34</sup> PET scans detect Alzheimer’s. *The Lancet*. 1997;349:1805-1809.

<sup>35</sup> Staff Reporter. Schering and Genome join forces to search for an asthma gene. *Wall Street Journal*. 1996 December 24.

<sup>36</sup> Edward J. Sondik, Ph.D., Director of the National Center for Health Statistics. Personal Correspondence to Stephen Harriman, Commissioner of the Connecticut Department of Public Health. 1996 September.

<sup>37</sup> Cardiovascular disease includes coronary heart disease, diseases of the heart, and cerebrovascular disease.

<sup>38</sup> The National Institute of Health. *Healthy Heart Handbook for Women*.

<sup>39</sup> The National Institute of Health. *Healthy Heart Handbook for Women*.

<sup>40</sup> The National Institute of Health. *Healthy Heart Handbook for Women*.

<sup>41</sup> The National Institute of Health. *Healthy Heart Handbook for Women*.

<sup>42</sup> Connecticut Department of Public Health, Health Education and Intervention Unit, and the Office of Health Care Access, Hospital Discharge Abstract and Billing Data Base, 1994.

## ENVIRONMENTAL CONDITIONS

### Environmental Tobacco Smoke

Every year the first-hand use of tobacco kills more Americans than alcohol, accidents, fires, illegal drugs, AIDS, murder, and suicide, combined. Exposure to environmental tobacco smoke (ETS) also may contribute to the development of acute and chronic illnesses that result in premature loss of life. ETS is known to effect or worsen symptoms of illnesses ranging from sub-clinical manifestations to those requiring hospitalization. These symptoms do not necessarily result in imminent life-threatening situations or death.

There is no known safe level of exposure to ETS, and no way, unless direct monitoring were taking place, to determine how much actual exposure there is. In addition, the array of individual characteristics and factors that may affect symptoms or illness are extremely difficult to account for. For fetuses, infants, and very young children, it is simpler to describe the risks of exposure to ETS. While there is no known safe level of exposure to ETS in adults, there is absolutely no safe level of exposure for this population, whose respiratory, cardiovascular, and other bodily systems are developing.

Children's exposure to ETS is a significant public health problem. A large population is at risk from a very real threat to its health which has resulted in a rise in the number of young women of childbearing age who have begun smoking. Smoking during pregnancy is associated with low birthweight and Sudden Infant Death Syndrome. Each year an estimated 30 infants die from causes related to maternal smoking during pregnancy and/or exposure to ETS in the first months of life.<sup>43</sup> ETS worsens asthma in children and is a risk factor for asthma in healthy children. Exposure to ETS is associated with an increased amount of respiratory symptoms: wheezing, coughing, and sputum production; an increased amount of middle ear effusion (fluid), a risk factor for middle ear infection; and a measurable reduction in lung function<sup>44</sup>. For children under age 5 in the United States, ETS is responsible for:<sup>45</sup>

- 136 to 212 deaths from lower respiratory infection
- 148 deaths from fires
- 354,000 to 2.2 million cases of otitis media
- 5,200 to 165,000 tympanostomies
- 14,000 to 21,000 tonsillectomies
- 529,000 asthma visits to physicians
- 260,000 to 436,000 episodes of bronchitis
- 115,000 to 190,000 episodes of pneumonia

During the last decade, more effective tobacco control efforts have emerged. Cities and towns are banning smoking in public places and states are raising tobacco and/or cigarette taxes for the combined effect of providing a financial disincentive to purchase these products and a mechanism to finance tobacco prevention programs. Recently, state attorneys general have been working on a settlement with the tobacco industry which provides compensation for current and future costs of smoking-related illness for state medical assistance clients, and regulation of the industry in terms of marketing, illegal sales to minors, and advertising.

### Food Protection

#### *Outbreaks of Foodborne Diseases*

The identification of safe and effective methods of ensuring that our state's food supply is free of pathogenic organisms has long been a goal of DPH. Recent increases in foodborne disease outbreaks,

<sup>43</sup> Connecticut Department of Public Health. *The Toll of Environmental Smoke in Connecticut*. Hartford, CT: 1996.

<sup>44</sup> U.S. Environmental Protection Agency. *The Health Effects of Passive Smoking*. Washington, D.C.:1993.

<sup>45</sup> Difranza and Law. *Pediatrics*. April 1996.

especially with meat, poultry, and fresh produce have served to emphasize the importance of this problem. The risk of foodborne disease attributed to bacteria, parasites and viruses is increasing. The well established pathogens such as *Salmonella* continue to cause significant numbers of illness. Public health officials are being challenged by emerging pathogens along with the traditional foodborne pathogens. Three recent examples of foodborne illnesses that have occurred nationwide and in Connecticut follow.

- Hepatitis A Virus (HAV) - Spring, 1997. Associated with frozen strawberries grown in Mexico and processed in California. Served through school lunch programs with cases occurring in a number of states nationwide.
- *Cyclospora cayatanesis* (protozoan parasite) - Spring, 1996 and 1997. Several outbreaks and cases nationwide, including Connecticut. Associated with raspberries, primarily from Guatemala and possibly South America.
- *Escherichia coli* (bacterium) - Connecticut experienced an outbreak in the summer of 1996 associated with a domestic grown lettuce blend (mesclun). Concurrently, an outbreak due to the same strain of *E. coli* and associated with the same food item occurred in Illinois.

In the fall of 1996 an outbreak of *E. coli* in Connecticut was associated with the consumption of fresh, refrigerated apple cider. Shortly after, another outbreak was identified on the west coast which also implicated fresh juices (apple and apple blends) as the vehicle for this bacterial agent.

The lessons learned from recent foodborne disease is that constant vigilance is required. While some foodborne diseases represent mild illnesses to otherwise healthy adults, they can have serious consequences for high-risk populations, such as the very young, very old, and those with existing illnesses, especially the immunocompromised. Free-trade agreements have opened new markets and have increased the availability and variety of fresh fruits and vegetables. Some of these fruits and vegetables originate in underdeveloped countries and have been implicated in outbreaks of disease in the United States.

#### *Trained Workforce*

A key component of a comprehensive, effective program for food safety at the retail level is an educated workforce. After the occurrence of three major *Salmonella* outbreaks over a four-month period (one nursing home outbreak resulted in four deaths) in late 1986 and early 1987, the Connecticut General Assembly mandated food safety knowledge for food operators. The premise of the legislation was that each establishment should have at least one individual with a demonstrated knowledge of food safety.

Foodborne disease and food safety are dynamic issues which require public health professionals to keep pace with changing technologies and the emergence of new pathogens. While food service operators do not need the same level of knowledge required for health professional they need a basic understanding of the causes of foodborne disease and how it can be prevented. Additionally, food service employees need periodic updates and refresher training.

#### *Regulatory Improvement*

Most state health code regulations in this country pertaining to food protection are based on models developed by, or in cooperation with, the FDA. The Connecticut food protection regulations are based on the 1962 FDA Model Code. Since then the FDA has revised the code in 1976, 1993, 1995, and 1997. In 1993, the FDA developed one comprehensive code to cover all retail operations, retail grocery stores, food service, itinerant vendors, and caterers. They also adopted a two-year process of review and revision.

Local health officials in Connecticut have expressed a desire to bring the food protection regulations up-to-date. There is a need to consider changes in technology, and the emergence of new pathogens, and new vehicles of transmission (e.g., whole shell eggs, ground beef, apple cider, raspberries, lettuce, melons, etc.). This process has begun with a review of current certification and re-certification protocols, with a goal of establishing more clearly defined and formal regulatory procedures.

### *Education*

The need for food safety education occurs at the level of regulation, production, and the general public. Rapid changes in the food service industry (bulk food sales at supermarkets, changes in menus, and food selection resulting from the globalization of the food supply) and changes in food preparation methods (refrigerated pastas, modified atmospheric packaging) all represent opportunities for disease transmission. This education effort will need to make use of traditional methods such as classroom instruction and print media, and new technologies such as the Internet.

### *Irradiation of Food*

Various techniques of sterilizing food by exposure to ionizing radiation have been developed. These techniques are currently in use in over 38 countries and have been endorsed by the World Health Organization. Despite their widespread recognition, the techniques have not been well accepted in the U.S. This is based primarily on concerns of residual by-products of ionization that place consumers at increased risk for cancer and other adverse health effects.

Food that has been irradiated does not contain residual radiation. The Environmental Epidemiology and Occupational Health (EEOH) Division has been reviewing studies of irradiated food to determine the risks from this technique and to develop a means of communicating these to consumers.

### *Housing Materials*

Lead poisoning is a serious but preventable health problem. Lead is a poison that affects virtually every system in the body. It is particularly harmful to the developing brain and nervous system of fetuses and young children. Lead dust and lead-based paint are the major sources of lead poisoning in children, particularly if the paint weathers, flakes or becomes chalky. Children in homes built prior to 1978 are at highest risk of being in a lead-based paint environment.<sup>46</sup>

The EEOH Division's Childhood Lead Poisoning Prevention Program (CLPPP) has been actively promoting the screening of children up to the age of six for lead poisoning since the CDC issued screening guidelines in 1991. While the CLPPP initially focused on all children in this age range, the accumulated screening data suggest that the prevalence of lead poisoning is greatest in cities that have both a high percent of older, pre-1950, housing and large numbers of children exposed to painted surfaces in poor condition.

The CDC revised the screening guidelines in November of 1997.<sup>47</sup> To initiate the best approach to implementing these guidelines, the CLPPP has formed an advisory group, the Connecticut Lead Poisoning Screening Committee to review current information on Connecticut housing, populations, and current lead poisoning prevalence data. The Committee will determine the best approach to identifying children with elevated blood lead levels and preventing additional cases of lead poisoning.

CLPPP has received a growing number of notices from local health officials regarding multiple environmental hazards for lead exposure encountered in the assessment of apartments and other homes. These hazards range from asbestos fibers emitted from old pipe insulation to formaldehyde out-gassing from carpets, particle board, and other furnishings and building products, and radon emissions from natural radium deposits in soils. In some cases, efforts to mitigate one hazard may increase exposure to others. Moreover, information aimed at increasing public recognition of a single substance may direct attention and resources away from other, more hazardous issues.

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<sup>46</sup> University of Connecticut and the Connecticut Department of Public Health. *What you Should know about Lead Poisoning: A Resource Manual for Childcare Providers*. Hartford, CT: 1997.

<sup>47</sup> U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention. *Screening Young children for Lead Poisoning: Guidance for State and Local Public Health Officials*. 1997.

While some hazards, such as asbestos, are part of formal regulatory programs, others, such as formaldehyde, mold, mildew, and dust mites are not. Both comprehensive regulatory and public education programs are needed to provide a coordinated approach to these hazards.

## OCCUPATIONAL CONDITIONS

### Latex Allergy

The prevalence of latex allergy in the general population is thought to be less than 1%. However, the prevalence in individuals with spina bifida, urogenital abnormalities, childhood atopy, eczema, and certain food allergies can range from 28% to 67%. In health care workers, the prevalence is estimated to be between 7 and 10%. Atopic health care workers are at even a greater risk. Other workers at risk include kitchen/dietary workers, maintenance personnel, workers involved in the manufacture of rubber or rubber products (toys, rubber bands, gloves), and any other workers with chronic latex exposure.<sup>48</sup>

Latex is the sap from the rubber tree *Hevea brasiliensis*. Many health care, food service, maintenance, and day care workers report allergic reactions to latex-containing medical products, particularly latex gloves. With the implementation of universal precautions, health care workers' exposure to latex has increased dramatically. Exposure can occur by direct contact with skin and mucus membranes, and by inhalation. People at high risk for developing latex allergy include those with allergies to certain foods (banana, kiwi, chestnut, avocado), those undergoing many medical procedures (children with spina bifida), and those who use latex gloves in work settings.

The increased numbers of persons who have developed allergy to latex products have serious public health implications. Persons with sensitivity to latex products are susceptible to strong adverse reactions, which may even be life-threatening, when they come into contact with latex. Reactions have occurred after exposure to latex in adhesives, shoes, gloves, condoms, balloons, stretch textiles, urinary catheters, barium enema equipment, and even a squash racket handle. Although approximately 80% of all latex reactions are non-immunologic (or due to irritation), approximately 20% have an immune basis.<sup>49</sup>

The predominant immunologic response to natural latex rubber is Type IV delayed hypersensitivity to rubber additives, which often presents with contact dermatitis. The additives include accelerators used during the manufacturing process to speed curing. Approximately seven days are required for the induction and sensitization process in Type IV delayed reactions. Contact dermatitis may be prevented with barrier creams and seamless, nylon glove liners.

Type I hypersensitivity reactions to latex are serious and life threatening. They occur immediately, with a different immunologic mechanism, and are manifested by massive local release of histamine. They include hives, nasal congestion, wheezing, angioedema, conjunctivitis, throat tightness, and anaphylaxis. Between 1988 and 1992, the FDA reported more than 1,000 systemic reactions to latex, of which 15 were fatal. Some health care workers may develop Type I sensitization after regular exposure to latex. Areas with significant airborne latex allergens (operating rooms, intensive care units, and dental suites) may sensitize workers who inhale allergenic proteins. One concern of experts is that initial mild immune reactions can progress to more serious reactions with continued exposure. There is also concern that non-allergic reactions such as irritant hand dermatitis disrupt the skin barrier, increasing exposure and the risk of developing allergy.

Research to better understand latex hypersensitivity is ongoing. In spina bifida patients, it is believed that sensitization may occur from early, intense, and chronic exposure to rubber products during multiple

<sup>48</sup> Massachusetts Department of Public Health and Occupational Health Surveillance and the Massachusetts Thoracic Society. Latex allergy in health care workers. *SENSOR Occupational Lung Disease Bulletin*. February 1995.

<sup>49</sup> Massachusetts Department of Public Health and Occupational Health Surveillance and the Massachusetts Thoracic Society.

surgeries, examinations, and diagnostic procedures, and bowel and bladder programs. The Spina Bifida Association of America produces materials to educate health professionals and their patients about latex allergies in this high risk population. The Spina Bifida Association literature includes a list of products that contain latex, and examples of latex-safe alternatives. Some institutions with large pediatric populations are moving towards becoming "latex-safe," i.e., minimizing the use of latex throughout the hospital. Nationally, the Shriners Hospitals network has banned certain latex-containing products from hospital floors.

### Endocrine Disruptors

Endocrine disruptors are environmental chemicals that exert toxic effects by mimicking hormones or by changing the way hormones normally function. Recent findings of endocrine disruption and reproductive effects in wildlife exposed to chemicals has spurred public concern and research interest in the potential effects of these chemicals on human reproduction.<sup>50</sup> While most interest has focused upon chlorinated chemicals such as dioxin, PCBs, and banned pesticides (DDT, chlordane), the list of potential endocrine disruptors has grown to include such chemicals as those commonly used in plastics.<sup>51</sup> A major research initiative at the federal level is aimed at developing new methods to detect and identify endocrine disruptors. As new data are developed, risk assessments will be needed to evaluate the potential reproductive hazards, such as infertility, and abnormal development, associated with exposure to these common chemicals. Further, the public will need sound and sensible risk communication to understand this complex issue.

## FAMILY HEALTH

### Infant Mortality

Infant mortality is generally on the decline in Connecticut. However, there is a continued disparity between white and non-white infant mortality rates and with urban areas showing considerably higher rates than other parts of the state. Low birthweight is a significant contributor to infant mortality. Low birthweight can result from either gestational prematurity or intrauterine growth retardation, among other factors. Both of these causes may be ameliorated by improved prenatal care, nutrition, smoking cessation, and cessation or decreased substance use and abuse.

The State supports numerous programs to improve and maintain the participation of high-risk populations in prenatal care services. Strategies to improve participation in prenatal care services must include more than merely assuring early entry into prenatal care but also those which ensure compliance with regular prenatal care visits. Other strategies include participation in smoking cessation programs, and referrals for nutritional counseling, and food supplements. A more detailed analysis of infant mortality and low birthweight is given in Chapter 3.

### Nutrition in Child Care

During the last decade, responsibility for children's food intake has shifted from the family to the child care center/provider and the level of physical activity in children has fallen. Welfare reform, the return of mothers of young children to the work force sooner after childbirth, and other social factors are causing greater numbers of children to spend increasing amounts of time in a variety of non-traditional child care settings. Children are consuming greater proportions of their daily nutrients at child care centers and in other out-of-home environments. While some children bring food from home, many of these settings provide meals for the children in their care.

<sup>50</sup> Colborn, T., vom Saal, F.S., and Soto, A.M. Developmental effects of endocrine-disrupting chemicals in wildlife and humans. *Environmental Health Perspectives*. 1993. 101:378-383.

<sup>51</sup> Birnbaum, L.S. Endocrine effects of prenatal exposure to PCBs, dioxins, and other xenobiotics: implications for policy and future research. *Environmental Health Perspectives*. 1994. 102:676-679.

The change in responsibility for children's food intake raises concerns about the quantity and quality of children's nutrient intake. Proper nutrition is directly related to improved school performance, enhanced growth and development, and a reduction in obesity. To minimize the incidence of growth retardation, anemia, and other problems associated with poor diet, child care centers need to emphasize healthy eating. Healthy eating for children should include increasing intakes of calcium, fiber, fruits, and vegetables, while reducing fat intake. To implement these policies, many child care providers need technical assistance with menu planning, safe food handling, food preparation, and developing positive food experiences for the children in their care. They may also need assistance in developing strategies to promote physical activity.

### Breastfeeding

*Healthy CT 2000* and *Healthy People 2000* include objectives that call for an "increase to at least 75% the proportion of mothers who breastfeed their babies in the early postpartum period and to at least 50% the proportion who continue breastfeeding until their babies are 5-6 months old."<sup>52</sup> However, in Connecticut in 1994, the breastfeeding initiation rate among the general population was only 59% and the rate at 5-6 months only 19%.<sup>53</sup> In the low-income population served by the Women, Infant, and Children (WIC) Program, the rates during this period were significantly lower, at 41% and 10%, respectively.

Breastfeeding has advantages for both babies and mothers, and the advantages are seen in rich and poor nations.<sup>54</sup> They include the prevention of gastrointestinal and respiratory illness, of infections, and of certain immunologic disorders among infants. In addition to preventing illness early in life, breastfeeding appears to reduce the risk of certain chronic diseases and the reduction of morbidity associated with breastfeeding is of sufficient magnitude to be of public health significance.<sup>55</sup> Breastfeeding, particularly for extended periods, may also reduce the risk of breast cancer in premenopausal women.<sup>56</sup> This protective effect may be stronger among women of low parity.<sup>57</sup>

### Fetal Alcohol Syndrome (FAS)

Fetal Alcohol Syndrome (FAS) is the adverse effect of maternal alcohol consumption during pregnancy. Alcohol readily crosses the placenta and affects the developing fetus. An infant with FAS is characterized by abnormal facial features (short palpebral fissures, poorly developed philtrum, low nasal bridge, and thin upper lip), growth retardation, and neurological impairment. As FAS children grow and develop they often suffer from attention deficit problems, below average intellectual functioning, poor memory, reduced problem solving ability, and lower verbal fluency.<sup>58</sup>

Unlike most birth defects, FAS has a known etiology and is preventable. The *Healthy People 2000* objective is to reduce the rate of FAS to 1.2 per 10,000 live births. National data show an increase in the prevalence of FAS from 1 per 10,000 live births in 1979 to 6.7 per 10,000 live births in 1993.<sup>59</sup> The

<sup>52</sup> U.S. Department of Health and Human Services, Public Health Service. *Healthy People 2000 Conference Edition*. Washington DC. 1990:692pp. (Objective 14.9:377). *Healthy Connecticut 2000*. Objective 2.11 Nutrition section.

<sup>53</sup> Abbott Laboratories, ROSS Products Division. *Mothers' Survey*. 1996.

<sup>54</sup> Cunningham AS, Derrick DB, Jelliffe EFP. *Breastfeeding and health in the 1980s: A global epidemiologic review*. *Journal of Pediatrics*. 1991 May;118(5):664.

<sup>55</sup> Dewey KG et al. Differences in morbidity between breast-fed and formula-fed infants. *Journal of Pediatrics*. 1995;126(5)pt 1:696-702.

<sup>56</sup> Hirose K et al. A large-scale, hospital-based case-control study of risk factors of breast cancer according to menopausal status. *Japanese Journal of Cancer Research*. 1995;86:146-154.

<sup>57</sup> Michels KB, Willett WC, Rosner BA, et al. Prospective assessment of breastfeeding and breast cancer incidence among 89 887 women. *The Lancet*. 1996 February 17;347:435.

<sup>58</sup> Connor PD, Streissguth AP. Effects of prenatal exposure to alcohol across the life span *Alcohol Clinical Experience Research*. 1997;170-174.

<sup>59</sup> U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control. Update: trends in fetal alcohol syndrome - United States, 1979-1993. *Morbidity and Mortality Weekly Report*. 1995 April 7;44:249-251.

American Indian and African American populations are estimated to have higher prevalence rates than the general population.<sup>60,61</sup>

In Connecticut in 1993, the prevalence of FAS diagnosed during the first year of life is estimated to be 9.00 per 10,000.<sup>62</sup> This estimate is based on the number of cases ascertained through a passive surveillance system. A follow-up study may indicate that some cases may be fetal alcohol effects. In addition, Connecticut has been identified as a state at high risk for FAS, based on data from the BRFSS. Among women of childbearing age surveyed in 1995, Connecticut ranked fifth nationally in the proportion of women who reported any drinking in the past month, and 11% of those surveyed reported frequent drinking. Of Connecticut births in 1995, 522 (1.3%) were to mothers who had consumed alcohol during pregnancy.<sup>63</sup>

Most FAS prevalence rates are determined using the number of cases diagnosed in the first year of life. However, the principal dysmorphic features and central nervous system abnormalities are not always apparent during the first year of life. An active surveillance system that continues case ascertainment until a child reaches seven years of age would maximize the number of cases of this disease identified.

### Neural Tube Defects

Neural tube defects (NTDs) are birth defects of the brain or spinal cord. Spina bifida and anencephaly are two of the more common defects. The estimated lifetime medical cost for a case of spina bifida is \$324,000.<sup>64</sup>

A recurring theme in the NTD epidemiology is that acute or chronic poverty may play a key role in its etiology.<sup>65</sup> Further research led to the B-vitamin folic acid as an important agent of NTDs. Mothers who took folic acid, immediately before and during the first two months of pregnancy dramatically reduced the risk of spina bifida and anencephaly in their babies.<sup>66</sup> It has been estimated that half of NTD cases could be prevented by folic acid supplementation in the amount of 400 micrograms daily taken in the form of a multivitamin that also contains vitamin B-12 to prevent the masking of pernicious anemia that could happen from folic acid supplementation.<sup>67</sup>

The incidence of NTDs in the United States is estimated to be one case per 1000 live births.<sup>68</sup> However, the true incidence of the defects is not known, because the number of pregnancies that terminate because of the defects is not usually included in estimates of disease occurrence.<sup>69</sup> There were 19 live births with NTDs identified in the Connecticut Birth Defect Prevention and Surveillance Project registry in 1993, or 4.07 per 10,000 live births. Pregnancies that were prenatally diagnosed with NTDs and subsequently terminated before 20 weeks gestation are not included in the registry.

Since the early 1970s, progress has been made in the prenatal diagnosis of NTDs by both maternal serum alpha-fetoprotein screening and high-resolution ultrasonography. In a study involving the population-

<sup>60</sup> Chavez GF, Cordero JF, Becerra JE. Leading major congenital malformations among minority groups in the United States, 1981-1986. In: CDC surveillance summaries. *Morbidity and Mortality Weekly Report*. 1988;37(No. ss-3):17-24.

<sup>61</sup> Abel EL. An update on incidence of FAS: FAS is not an equal opportunity birth defect. *Neurotoxicology and Teratology*. 1995;17:437-443.

<sup>62</sup> Connecticut Department of Public Health. Connecticut Birth Defect Prevention and Surveillance Project.

<sup>63</sup> Connecticut Department of Public Health. *Registration Report of Births, Deaths, Marriages, and Divorces*. Hartford, CT:1995.

<sup>64</sup> U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention. Time for Action: Prevention of Spina Bifida and Anencephaly. CDC Conference Presentation, Alexandria, VA: 1995.

<sup>65</sup> Slattery ML, Janerich DT. The epidemiology of neural tube defects: A review of dietary intake and related factors as etiologic agents. *American Journal of Epidemiology*. Johns Hopkins University School of Hygiene and Public Health. 1991;133(6):526.

<sup>66</sup> U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control. Recommendations for the use of folic acid to reduce the number of cases of spina bifida and other neural tube defects. *Morbidity and Mortality Weekly Report*. 1992 September 11;41:1-7.

<sup>67</sup> U.S. Department of Health and Human Services.

<sup>68</sup> Elwood JM, Elwood JH. Epidemiology of anencephalus and spina bifida. Oxford: Oxford University Press. 1980.

<sup>69</sup> Sever LE. Epidemiologic aspects of neural tube defects. In: Crandall BF, Brazier MAB, eds. *Prevention of Neural Tube Defects: The Role of Alpha-fetoprotein*. Chap. 8. New York: Academic Press, Inc. 1978.

based surveillance systems in four states, the percentage of pregnancies in the early 1990s that resulted in early termination due to prenatal diagnosis of NTDs ranged from 9% to 42%.

## EMERGING ISSUES IN HEALTH CARE

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### MANAGED CARE

Since 1980, managed care has reshaped the financing and delivery of health services in the United States. Managed care organizations (MCOs) provide, arrange for and finance medical services using provider payment mechanisms that encourage cost containment and selective contracting with networks of providers.<sup>70</sup> As part of this process, MCOs often employ or contract with utilization review staff to determine the medical necessity, efficiency, or appropriateness of health care services and treatment. There are a variety of managed care organizational structures, but the three types that account for the greatest share of enrollment nationally are Health Maintenance Organizations (HMOs), Point of Service Plans (POS), and Preferred Provider Organizations (PPOs).

In the early 1980s, health insurance became a major cost of doing business for American employers. At the time approximately 69% of the population had employer-provided health insurance, and employers paid about 80% of the premium. Health care costs were typically passed on to the consumer in the form of higher prices for goods and services, but these costs began to affect American competitiveness overseas.<sup>71</sup> As such, employers became the principal drivers in seeking health care cost containment strategies. These strategies included ensuring appropriate hospital use, negotiating set fees or caps in advance for costly procedures like heart surgery and transplants, negotiating discounted fees with “preferred providers” for medical services, and encouraging employees to join HMOs.<sup>72</sup> In addition, the cost of financing health benefits was limited or shifted to employees through higher coinsurance rates or decreased health benefits. Between 1988 and 1993, the rate of employer sponsored insurance coverage dropped for every income group,<sup>73</sup> and between 1992 and 1995, the employee share of total health insurance premiums rose from 23.6% to 28.9%.<sup>74</sup> For employers, these techniques of managing health care costs helped to slow increases of up to 20% a year in their medical bills. With this success, federal and state governments moved to develop and implement managed care programs for their employees and those eligible for medical assistance programs.

Managed care’s success in controlling costs is based on changing the financial incentives upon which physicians operate. Under the fee-for-service system, physician income was a function of the number of services provided, creating an incentive to overutilize health services. To control this, managed care organizations may selectively contract with a defined set of providers enabling them to track and monitor utilization and costs associated with physician practice patterns. Additionally, they may use several forms of provider payment mechanisms that encourage cost containment (e.g. capitation, case rates, per diem). Each presents slightly different incentives to the physician when utilizing health services. Capitation is the most comprehensive payment mechanism, requiring the provider to deliver or arrange for all the health services an enrollee needs for a fixed dollar amount. The incentive for the provider is to limit those services for which the patient’s benefit is marginal and avoid costly hospitalizations.<sup>75,76</sup>

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<sup>70</sup> American Public Health Association. APHA policy paper: public health services and managed care. *The Nation's Health* 1996 Oct; 12-13.

<sup>71</sup> A highly documented case was that health insurance costs added \$600 to the price of a car at the Chrysler Corporation. Thurow L. *Medicine versus economics. New England Journal of Medicine* 1985 Sept; 313(10):611-14

<sup>72</sup> Chapman FS. Deciding who pays to save lives. *Fortune* 1985 May; 135 (10): 59-67.

<sup>73</sup> Holahan C, Winterbottom C, Rajan S. A shifting picture of health insurance coverage. *Health Affairs* 1995 Winter; 14(4): 253-264.

<sup>74</sup> Center for Studying Health System Change. Tracking health care costs: a slowing of the rate of increase. *Issue Brief*. 1997 Jan; (6): 1-4.

<sup>75</sup> Average physician encounters per member fell 3% from 1994-1995. Average number of ambulatory visits fell by 17.6% from 1994-1995.

<sup>76</sup> Hoechst Marion Roussell. *Managed Care Digest Series: HMO-PPO Digest*, 1996. Kansas City (MO); 1996.

Effect of Managed Care on Health Care Costs

Beginning in 1994, health care costs have slowed significantly. Table 2-1 contains a comparison of different data sources and surveys of national health care costs. While data and methods vary and this affects the magnitude of change, all sources show a clear trend of decreasing rates of increase for health care costs.<sup>77</sup> However, the issue is whether these low rates of increase can be sustained, particularly as the population ages.

Managed Care Enrollment

With both the private and public sectors continuing to move their populations into managed care programs, enrollment in managed care plans has grown rapidly. Nationally, an estimated 120 million people are enrolled in HMOs alone. In Connecticut, there are over one million people, representing approximately 32% of the state’s population for 1996. This is an increase of 35% since 1993.<sup>78</sup>

**Table 2 - 1  
National Health Care Costs**

Indicator	Year	Percent Increase	Year	Percent Increase
National Health Expenditures <sup>a</sup>	1990	+11%	1994	+5.4%
Health Cost Index <sup>b</sup>	1990	+10.9%	1995	+3.2%
Employer Survey <sup>c</sup>	1992	+11.8%	1995	+1.2%

Source: Center for Studying Health System Change. Tracking Health Care Costs: A Slowing Down of the Rate of Increase. Washington, D.C.: January, 1997

<sup>a</sup>National Health Accounts database prepared by HCFA using information from providers and insurers. Annual percentage change per capita for years 1990 and 1994 noted.

<sup>b</sup>The Index is based on provider survey data for major health spending components (hospitals, physicians, and prescription drugs). Per capita increases in spending for 1990 and 1995 noted.

<sup>c</sup>Survey of employer-sponsored health plans. Per capita increase in premiums per enrollee for 1992 and 1995 noted.

Health Care Industry Changes

As more of the population becomes covered by managed care organizations and the financial incentives change, the health care delivery system continues to undergo a rapid transformation. The major changes, identified below, will have an indirect effect on the public health infrastructure and provision of public health services in the future.

*Consolidation*

Across the nation, hospital and health plan mergers and acquisitions occur at an unprecedented level. For hospitals, this type of activity increased 5% in 1996. Although consolidation is often presented as a transaction that will create administrative efficiencies, it also has the potential to create powerful entities that can raise prices, have less need to respond to their customers, and have limited incentives for innovation. If several large entities control one area, choice, quality, and accountability become issues of concern.<sup>79</sup>

<sup>77</sup> In Connecticut, benefit costs per employee in both HMO and indemnity plans have decreased from 1994 to 1995. Connecticut General Assembly, Legislative Program Review and Investigations Committee, State of Connecticut. *Regulation and Oversight of Managed Care*. Hartford: Legislative Program Review and Investigations Committee; 1996 Dec; 8.

<sup>78</sup> Connecticut Department of Insurance. 1996 HMO Year End Enrollment Report. 1997 April.

<sup>79</sup> Center for Community Health Action. Consolidation in the health care market: good or bad for consumers. *States of Health* 1996 Feb; 6(2): 1-7.

### *Decreasing Length of Inpatient Hospital Stays*

Under managed care, hospitals are viewed as “cost centers,” and therefore routine treatments are being shifted to outpatient or alternative settings like free-standing surgi-centers. While the trend may be fueled by incentives related to managed care (e.g. changes in hospital reimbursements, growth in the number of hospital outpatient departments), advances in technology also make this change possible (e.g. new surgical techniques resulting in less invasive procedures, and advances in anesthesiology and pain control). Inpatient utilization is expected to continue to decline particularly for surgical inpatient days, births, and mental health care. This trend resulted in new laws dictating lengths-of-stay for particular services. Reflecting both national and northeast trends, the statewide average length of stay in Connecticut’s acute care general hospitals decreased 23.6% between 1991 and 1995 from 6.8 days to 5.5 days. (See Chapter 4 for more information.)

### *Conversions of Non-Profit Hospitals and Health Plans to For-Profits:*

In 1996, 63 non-profit hospitals converted to for-profit status, while Blue Cross/Blue Shield plans in eight states obtained or pursued for-profit status from 1995 to 1997.<sup>80</sup> The major reason for this shift is the financial pressures of a competitive health care system, which force hospitals and health plans to raise capital for financing acquisitions, building computer technology, and forming network alliances. Unlike for-profits, non-profits do not have the capacity to raise capital required for such activities. Conversions are being watched carefully due to the potential loss of public assets and the effect public ownership may have on access and delivery of health care. As these organizations will answer to shareholders and seek to maximize profits, historically unprofitable community services such as trauma and burn centers, perinatal intensive care units, care for the chronically ill, AIDS patients, and the poor and underinsured could be negatively affected.<sup>81</sup>

### Medicare Managed Care

Medicare costs have risen dramatically due to a shift in national demographics in which more people are living longer, fewer births are occurring, and the portion of the population known as the “baby boomers” are aging. (See Chapter 3 for more on demographic trends). Additionally, the elderly are high consumers of costly acute and long-term care services. As more of the nation’s population needs elderly health services and a declining proportion of the population will be contributing taxes to finance the program, Medicare’s fiscal health will remain in jeopardy if programmatic changes are not initiated. Table 2-2 illustrates increasing payments experienced by the Medicare program for certain benefits.

**Table 2 - 2**  
**Growth in Medicare Payments**

Medicare Benefit	1994 (In billions)	1995 (In billions)	% Increase
Skilled Nursing Facility	\$7.1	\$9.1	28.2%
Home Health	\$12.0	\$15.1	25.8%
Hospice	\$1.4	\$1.9	35.7%

Source: HCFA, Bureau of Data Management

As a way to contain costs for the aging population, both private companies and the federal government are offering managed care plans to retirees and Medicare eligibles. While enrollment in HMOs for Medicare beneficiaries has doubled in the past five years, at the end of 1996 HMOs covered only about 10% of beneficiaries, with Health Care Financing Administration (HCFA) actuaries projecting a 2% increase

<sup>80</sup> Alpha Center. State oversight of hospital and health plan conversions. *State Initiatives in Health Care Reform*. 1997 Feb; (21): 1-12.

<sup>81</sup> Alpha Center, 2.

by the end of 1997. Enrollment is expected to approach 10 million beneficiaries by the year 2002.<sup>82</sup> Despite this recent growth, Medicare beneficiary enrollment into managed care lags behind the private sector in which approximately 70% of the population under age 65 receiving health benefits are now enrolled.<sup>83</sup> One reason for this lag is that the move to managed care for Medicare eligibles is strictly voluntary.

Several changes will be made to the Medicare program through the federal Balanced Budget Act of 1997.<sup>84</sup> Congress postponed the immediate threat of fiscal insolvency by reducing payments to providers. Incentives to move to managed care plans were bolstered by providing beneficiaries with more choices through allowing alternative managed care arrangements to participate in the program (e.g. Provider Sponsored Organizations (PSOs) and PPOs). Preventive benefits such as mammography, pap smears, diabetes, prostate screening, and vaccines were added as covered benefits. Longer term solutions to the cost issue will be addressed through a national Bipartisan Commission on the Future of Medicare, which will assess the impact of the "baby boom" generation and make recommendations to Congress to preserve the program. Any fundamental changes to the Medicare program should be monitored to ensure that quality and access do not decline for this population. Increasing costs and a complicated system such as managed care may already act as access barriers for the elderly; even small changes in out-of-pocket payments can affect access, as many are on fixed incomes. Additionally, strong quality assurance programs will be needed. The elderly often have chronic illness, disability, and higher hospitalization rates. Higher utilization must be balanced with the financial incentives to limit treatments and avoid hospitalizations existing within capitated MCOs. Additionally, the MCOs have had relatively little experience determining appropriate medical care and utilization for the Medicare population.

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<sup>82</sup> Cosgrove, James C. United States General Accounting Office. Data from the Health Care Financing Administration, Medicare Managed Care Monthly Report and Congressional Budget Office Medicare Baseline, January, 1997.

<sup>83</sup> United States General Accounting Office. *Medicare HMOs: Rapid Enrollment Growth Concentrated in Selected States*. Washington (D.C.): 1996 Report No: GAO/HEHS-96-63.

<sup>84</sup> Majority staffs of the House and Senate Committees on the Budget. *"The Conference Agreement on the Balanced Budget Act of 1997: Summary of Provisions"*. <http://www.house.gov/budget/papers/mainsumm.htm>. (30 July 1997).

## STATE INITIATIVES

The State of Connecticut's experience with managed care encompasses the state employee health plan, the Healthcare for Uninsured Kids and Youth Program (HUSKY), the Medicaid managed care program (formerly "Connecticut Access" now referred to as HUSKY Part A), and the development of a pilot program of integrated care for dually eligible individuals (those eligible for both Medicare and Medicaid). Additionally, the state is in the process of implementing an enhanced managed care regulatory structure enacted by the 1997 Legislature.

### State Employee Health Plan

Historically, coverage for State employees, retirees and dependents was provided by a State-purchased, fully insured indemnity plan. By the early 1980's, State health insurance costs were increasing by more than 10% a year, a problem familiar to most employers offering health insurance to employees and retirees. As such, the State and labor unions created the Health Care Cost Containment Committee with responsibility for implementing cost control measures and initiating health promotion and wellness activities.

To help control costs, employees were given the option to choose nine different HMOs throughout Connecticut, but nearly 80% chose the indemnity plan.<sup>85</sup> As the state's fiscal condition worsened in the early 1990's, the State eliminated the indemnity option for resident employees and began offering several managed care plans. For dental services, the State offers two options, an indemnity plan and a capitated managed care plan. Although open now, new enrollment in the capitated managed care plan had previously been suspended, highlighting a general problem in Connecticut regarding access to dental providers.<sup>86,87</sup>

The State's quality improvement system is described in Appendix G. While the State is starting to incorporate the use of the Health Plan Employer Data and Information Set (HEDIS) data and programs for prenatal care and childhood immunizations, it falls short of more comprehensive quality improvement systems in public programs. More aggressive purchasing methods can be beneficial in holding plans accountable for the quality and cost-effectiveness (i.e. value) of services they provide.<sup>88</sup> Large employers, like the State, are in a better position to negotiate for this, because of the large number of enrollees they offer.

### Healthcare for Uninsured Kids and Youth (HUSKY)<sup>89</sup>

The federal Balanced Budget Act of 1997 created a new Title XXI of the Social Security Act called the State Children's Health Insurance Program (CHIP). It allocates approximately \$20 billion over the next five years to states who initiate or expand child health coverage to uninsured, low-income children. Although federal funding after five years has not been guaranteed, states are attracted to the program by the enhanced federal matching rate of 65%. The law allows states numerous design and implementation options although basic guidelines have been established. The guidelines primarily affect program eligibility, scope of benefits, and cost-sharing.<sup>90</sup> With respect to program design, states may implement a Medicaid expansion, a new state program which enrolls children in private health plans, a combination of these approaches, or fund direct provision of services.

<sup>85</sup> The Health Care Cost Containment Committee and the Office of the State Comptroller. *Labor and Management's Health Care Cost Containment Efforts: History, Recent Developments and Future Prospects for Connecticut*. 1995 Feb. 8;1-15.

<sup>86</sup> On the commercial side, a shortage of dentists has been identified in census tracts from all counties except Litchfield. Bureau of Community Health, Department of Public Health, State of Connecticut. Supplement to the CT Primary Care Access Plan. 1996 June.

<sup>87</sup> Dentists non-participation in managed care has been widely discussed within the context of the Medicaid managed care program.

<sup>88</sup> Nazemetz P. Ensuring quality: documenting value. Blue Cross/Blue Shield and University of Connecticut Symposium on Integrated Delivery Systems; North Haven, CT, 1995 May 24.

<sup>89</sup> Technical information on the HUSKY program and its provisions was provided through DSS prepared documents and personal communications with HUSKY Plan Project Manager, Linda J. Mead.

<sup>90</sup> Ullman F, Bruen B, Holahan J. *The state children's health insurance program: A look at the numbers*. The Urban Institute. 1998 March.

Connecticut, like many other states, took advantage of this opportunity. A special legislative session was convened in October, 1997 and the subsequent passage of Public Act 97-1 created the HUSKY program. It will be financed by federal monies totaling \$36 million (or 65%) and a state contribution of \$19 million (or 35%). The program includes both a Medicaid expansion and a new state program. It is administered by DSS. The program has three parts, HUSKY Part A, HUSKY Part B, and HUSKY Plus, which are discussed in more detail below.

*HUSKY Part A*

Part A includes both the Medicaid managed care program and a new Medicaid expansion. However, CHIP funding is used to finance the Medicaid expansion only. The expansion includes 14 and 15 year olds up to 185% of poverty who became eligible for Medicaid July 1, 1997; 16 year olds up to 185% of poverty who became eligible October 1, 1997; and 17 and 18 year olds up to 185% of poverty who became eligible January 1, 1998. The HUSKY Part A program is discussed below in more detail under "Medicaid Managed Care".

*HUSKY Part B*

Part B is a new state program which will provide health insurance for uninsured children under age 19 whose family income is between 185% to 300% of the federal poverty level. Families with children who are uninsured and have incomes over 300% of the federal poverty level may buy-in to the plan at the state negotiated rate. Because it is a separate program from Medicaid, Part B is a non-entitlement program. Eligibility, cost sharing and estimated eligibles are provided in Table 2-3 below:

**Table 2-3  
HUSKY Part B Eligibility and Cost Sharing**

% of Federal Poverty Level	Premiums	Aggregate, Annual, Cost Sharing Limitations <sup>91</sup>	Estimated # of Eligibles
Over 185-235	N/A	\$650	15,300
Over 235-300	\$30 per child per month with a max of \$50 per family	\$1250	7,000
300+	State negotiated premium rate	N/A	14,400

Source: Department of Social Services

Through a competitive bidding process, the DSS has chosen the following health plans to provide care to Part B enrollees: BlueCare Family Plan, Community Health Network, HealthRight, Kaiser Permanente and Preferred One. These plans also participate in HUSKY Part A. Enrollment, which began July 1, 1998, has reached approximately 2000 children.<sup>92</sup> This is about 9% of the estimated eligible population for Part B. Enrollment in the HUSKY Plus program (described below) has only reached approximately 10 children.<sup>93</sup> DSS is investigating the reasons for the low enrollment levels but they are still unknown at this time. However, low enrollment in CHIP programs appears to be an issue across all states. States are concerned that federal baseline projections of the uninsured are much higher than actual (particularly for smaller states like Connecticut). Increased, targeted outreach efforts, and marketing efforts to reduce the "stigma" of state assistance could help enrollment levels but a clearer understanding of the reasons for low enrollment levels is needed in order to develop appropriate actions to resolve the issue.

Under federal law, the state can develop a benefits package based on either the benefits offered to state employees, the federal employee health benefit plan, or the health benefits plan offered by the state's

<sup>91</sup> Per Public Act 97-1, these cost sharing provisions apply through July 1, 1999 at which time DSS must submit a schedule for maximum annual cost sharing subject to legislative committee review.

<sup>92</sup> This figure represents enrollment in Part B as of December 1, 1998.

<sup>93</sup> This figure represents approximate enrollment in HUSKY Plus as of December 1, 1998.

largest commercial HMO. HUSKY enrollees will receive benefits that are a combination of those offered under three state employee health benefit plans. Five dollar copayments will be charged for outpatient physician services, eye exams, hearing exams, and services provided by nurse midwives, nurse practitioners, podiatrists, chiropractors, and naturopaths, and oral contraceptives. Prescription drug copays vary depending upon whether the drug is generic brand (\$3) or a brand name (\$6). Copays will also be charged on outpatient mental health services (\$25 dollars or more after the first ten visits) and some dental services (bridge and crowns, root canals, dentures, extractions, orthodontia).

Federal law, state law, and state purchasing efforts govern HUSKY quality assurance activities. Each participating plan must have an internal quality assurance plan and must report regularly on quality, access,<sup>94</sup> and enrollment levels. An independent external quality review of the program must also be performed. Qualidigm (formerly the CT Peer Review Organization) was chosen to provide this assessment and it will be based on a sampling of patient charts, encounter data and a patient satisfaction survey. Performance measures will include the HEDIS measurement set relevant to children and adolescents as well as targets to reduce uninsured children. Participating plans will also have to submit financial data and utilization reports which include preventive care, behavioral health, inpatient services, immunizations, maternal and child health, and member satisfaction. Utilization reports are not yet available due to the infancy of the program. In general, assessing outcomes and performance of this program may present challenges. Outcome measures have been widely studied for adult populations but the knowledge base is more limited for children and adolescents.<sup>95</sup> Additionally, baseline, comparison data will not be available for the Part B population as these enrollees have not been previously eligible for state health insurance assistance.

Outreach is an important part of the program and will target all uninsured children whether they may be eligible for Part A (Medicaid) or Part B. Outreach strategies have included some of the more conventional activities such as radio and TV ads, a direct mail campaign, brochures and flyers, a toll free number, a website, and presentations. DSS will also be contracting with various community-based organizations, human service agencies, or coalitions which will be better able to reach those eligible for the program. Up to ten contracts may be awarded at varying monetary levels. Timely release of the outreach grants and marketing efforts coincided with the beginning of the school year may be helpful in increasing enrollment. Additionally, public health agencies offer many programs that provide outreach, care coordination, and linkage of services to needy and underserved populations including sites for adolescent and youth pregnancy prevention, healthy start, family planning, school based health centers, and community health centers. These programs penetrate the majority of Connecticut towns and therefore would be ideal to aid HUSKY outreach efforts.

### *Husky Plus*

The HUSKY Part B benefit package provides for coverage of acute care and primary care services however, DSS expects a small percentage of children to require extraordinary services. Children enrolled in Part B between 185- 300% of the federal poverty level whose needs cannot be accommodated by the Part B standard benefit package, can apply for coverage under HUSKY Plus. HUSKY Plus provides two supplemental insurance options at no additional cost. They are: HUSKY Plus Behavioral and HUSKY Plus Physical. Each program has an appointed Steering Committee which functions in an advisory capacity. In the

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<sup>94</sup> Dental access is of particular concern among advocates. The HUSKY program has the potential for 37,000 more children to access dental services. While there is no documentation that a dental access problem exists in Part B, the potential is inferred given the documented access problems in the Medicaid program (see Medicaid Managed Care - Ongoing Issues).

<sup>95</sup> Association of State and Territorial Health Organizations. *Children's health insurance implementation: Beginning the discussion on quality and performance measurement*. 1998 May.

case of HUSKY Plus Physical, the Committee will consist of the existing Title V<sup>96</sup> advisory committee with the additions of DSS and DCF representatives.<sup>97</sup>

### HUSKY Plus Physical

HUSKY Plus Physical will be jointly administered by the Title V providers, CT Children's Medical Center and Yale New Haven Children's Hospital. The providers utilized by the two hospitals in the Title V program will provide the services. Clinical eligibility is determined based on medical eligibility criteria established by the DPH Title V program or by the definition of Children with Special Health Care Needs (CSHCN) adopted by the Steering Committee. Children who are determined eligible will receive care coordination, advocacy, case management, and multidisciplinary evaluation. The children will receive benefits consistent with the Title V program to the extent that they are not covered under the Part B benefits package. All services are subject to prior authorization based on the definition of medical necessity adopted for the program. Like HUSKY in general, the plan will be reviewed annually by Qualidigm. Additionally, the Steering Committee hopes to develop outcome measures based on work done by the federal Maternal and Child Health Bureau (MCHB). The MCHB has developed 18 mandatory performance measures addressing children with special needs and maternal and child health. States are also required to add seven additional performance measures that are state specific. Connecticut has not chosen any performance measures specific to CSHCN at this time.

As mandated by PA 97-1, the DPH expanded coverage for the CSHCN program from 200-300% of poverty. It is expected that some Title V recipients will now be eligible for HUSKY Plus Physical. Title V programs have promoted and supported the concepts of community-based and family centered systems, cultural competency, care coordination, family participation, and linkage with other payers of health care services. The MCHB sets quality standards for CSHCN and expects each state through its Title V agency, to perform statewide needs assessments every five years for the entire maternal and child health population including CSHCN. Annual updates of these needs and services available for CSHCN are reported in the maternal and child health block grant application. Additionally, the MCHB expects the Title V agency to be an active participant in the development of policies and health care systems that include all payer types. It is important that these activities and priorities be carried over to the HUSKY Plus Physical program.

### HUSKY Plus Behavioral

DSS has contracted with the Yale Child Study Center to serve as the lead provider and manager for Plus behavioral services. The statewide provider network established by the Yale Child Study Center will include child guidance clinics, family service agencies, and youth service bureaus to provide care coordination, case management, and direct services. Through a competitive bidding process, twelve centers have been chosen to serve children throughout the state. To supplement the Part B package, the plan will offer case management, intensive in-home child and adolescent psychiatric services, and mobile crisis services. Eligibility will be assessed based on the severity of psychiatric and substance abuse symptoms, level of functional impairment secondary to symptoms, and intensity of service needs. Each eligible will have a Child and Family Treatment Team which may include parents, Center clinicians, HUSKY B and HUSKY Plus Behavioral representatives, and the primary care provider. Services are subject to utilization guidelines by Interqual and the American Academy of Child and Adolescent Psychiatry and case management guidelines developed by the CT Child Guidance Clinic Association. In addition to an annual review by Qualidigm, the Yale Child Study Center will have an outcome-based quality improvement system which

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<sup>96</sup> Title V of the federal Maternal and Child Health block grant provides funding to the state's Title V agency (the Department of Public Health). The funds are used to provide programs and services to maternal and child health populations. As part of this block grant funding, DPH administers a program for children with special needs. The program is the payor of last resort for underinsured children up to 300% of the federal poverty level who qualify under established medical eligibility criteria. The program provides ambulatory services.

<sup>97</sup> In January, 1999, the committee will be reorganized to include additional voting members from the Department of Insurance, Department of Mental Retardation, and the Office of The Child Advocate.

monitors the progress of children overtime on the combined utilization and outcome data from HUSKY Plus and HUSKY Part B.<sup>98</sup>

### *Public Health and CHIP*

The expansion of children's health insurance is a positive step for Connecticut in improving the health status of its youngest residents. Some of the areas where public health agencies can specifically contribute to the HUSKY program include:<sup>99</sup>

- providing policy guidance with respect to children with special health care needs and filling gaps in care;
- using existing services to create access points for referral or applications to enhance outreach and enrollment;
- work with other providers and local health departments to identify and develop needed enabling services;
- quality improvement activities and evaluation;
- linking state public health programs such as WIC, childhood immunizations and other MCHB sponsored programs.

Despite the new HUSKY program, it is likely that some children will remain uninsured. For this population, public health agencies need to continue (1) enabling and family support services for low income families or families caring for children with chronic illness or disability, (2) the provision of population-based prevention services, and (3) infrastructure services such as maintaining quality standards and ensuring access through Connecticut's safety net providers.

### Medicaid Managed Care

#### *Program Summary as of January, 1998*

DSS administers the state's Medicaid Managed Care program ("HUSKY Part A", formerly "Connecticut Access") through a federal 1915(b) waiver approved by the HCFA. The program covers those clients in the TANF (Temporary Assistance to Needy Families) program and related coverage groups such as pregnant women extension groups,<sup>100</sup> children up to age 19 with incomes under 185% of poverty, and children in the custody of the Department of Children and Families (DCF). For these groups, enrollment in managed care plans is mandatory. The program covers 218,000 clients however, enrollment fluctuates monthly due to changes in eligibility status.<sup>101</sup> Children comprise approximately 70% of the population enrolled.

Eight plans participate in the program.<sup>102</sup> Participating plans, enrollment levels, and market share as of January 1, 1998, are provided in Appendix F. Plans are responsible for all Medicaid covered services except medically related costs of special education in public schools and "Birth to Three" early intervention services for children up to age three with diagnosed or established developmental delays. All plans receive capitated payments for both inpatient and outpatient services.

Premiums are based on approximately 92% of the projected fee-for-service cost of the covered package of services. Premiums vary based on experience related to the clients' age, sex, and county of

<sup>98</sup> Schaefer M. Personal communication. 1998 Nov. 27

<sup>99</sup> The Lewin Group. *The impact of expanding children's health insurance on the role of maternal and child health Title V programs*. Prepared for the Maternal and Child Health Bureau. 1998 May 20.

<sup>100</sup> This category includes women and children born after September 30, 1983, with incomes under 185% of federal poverty level.

<sup>101</sup> Since the initial publication of the Assessment in January, 1998, enrollment has jumped to over 223,000 as of 11/1/98. DSS attributes this to the Medicaid expansion discussed under *HUSKY Part A* above and outreach efforts for the HUSKY program in general.

<sup>102</sup> Since the initial publication of the Assessment in January, 1998, one health plan (Oxford) has left the program bringing the total number of participating plans to seven down from eleven since the program's inception in 1995. Other plans leaving the program as of 10/1/97 include Aetna while HealthChoice and Bridgeport Hospital have merged with Yale Preferred.

residence, but average approximately \$142 per member per month.<sup>103</sup> At the direction of the legislature, a competitive bidding process will be used to develop rates for the upcoming contract renewal process with participating health plans.<sup>104</sup>

The program continually evolves in response to federal mandates and state purchasing requirements. New programmatic features scheduled to be included are a 12 month lock-in of enrollees, continuous enrollment for children for 12 months, and 6 month guaranteed eligibility for adults.<sup>105</sup> Due to programmatic changes, rate reductions, and a changing health care environment fewer plans are participating in the program. This was anticipated, however, if fewer plans participate in the future network capacity issues could result in placing clients back into fee-for-service. Fewer plans do provide an opportunity for greater and more effective oversight, but also triggers a re-enrollment process for clients whose plans no longer participate and narrows the choices offered to beneficiaries.

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<sup>103</sup>These approximate rates are in effect from 8/1/98 through 6/30/99. New rates will be established for the period 7/1/99-6/30/99.

<sup>104</sup> Since the initial publication of the Assessment in January, 1998, the competitive bidding and contract re-negotiations for 1998 had been delayed due to the incorporation of the HUSKY program and the delay in finalizing the business cost proposal. An RFA process has since been completed and all seven plans will continue in the program. Contract negotiations are expected to be finalized by 1999 and will take effect for the time period 2/1/99 - 6/30/2000.

<sup>105</sup> These provisions were part of the federal Balanced Budget Act of 1997. Since the initial publication of the Assessment in January, 1998, Connecticut has implemented the provisions for continuous enrollment for children and guaranteed eligibility for adults. The 12 month lock-in provision will be implemented pending HCFA approval of the state's 1915(b) waiver renewal expected in the first quarter of 1999.

### *On-going Issues*

Since implementation in August, 1995, there have been a variety of issues related to enrollment, education and information, coordination of care, and provider practice which have raised concerns as to whether the program is providing services equivalent to those offered under a fee-for-service system. The changing system and the rapid pace at which implementation occurred caused confusion among beneficiaries, providers, plans, and advocates. Many of these “informational” problems were corrected over time but there are several major issues still to be resolved.

#### Access to Dental Services

As under the fee-for-service Medicaid program, access to dental services remains a significant problem. The problem exists in all Medicaid managed care networks and has been substantiated by several surveys over the past year. A survey by DPH estimated that 40% of dentists participating in the fee-for-service Medicaid program intended to resign when the managed care program was implemented. Random phone calls to dental provider offices by DSS staff documented difficulty in scheduling appointments with dental providers. The outcome of the Children’s Health Council satisfaction and utilization surveys showed that more access problems occurred with dental care than any other type of specialty service.<sup>106</sup> Additionally, it found that even those dentists that participate in Medicaid may do so on a limited basis. Nearly 80% of the participating dentists were not accepting additional Medicaid children. The providers cited burdensome paperwork and related administrative requirements, patient non-compliance, and dental fee reimbursement rates as reasons for non-participation.<sup>107</sup> Although administrative complexity and cultural issues are being addressed, discussions regarding reimbursement rates are more complex. Most participating plans reimburse dentists at the level of Medicaid fee-for-service rates, which are approximately 55% of private rates for children and 35% for adults.<sup>108</sup> Interestingly, a previous rate increase in 1993 by DSS had the effect of increasing the number of services provided by participating dentists, but did not increase the number of dentists participating in the program.<sup>109</sup> Therefore, it is unclear if higher reimbursement rates would help solve the access crisis for managed care enrollees.

#### Integration of School-Based Health Centers (SBHCs) in the Medicaid Managed Care Program<sup>110</sup>

Although DSS requires participating plans to contract with SBHCs in the plans’ geographic service areas, there have been many organizational and financial barriers to integrating these entities into the Medicaid managed care program. A major barrier is the merging of two separate organizational cultures, as both health plans and SBHCs have little expertise in working with each other. There have also been lengthy credentialing processes for the centers and their providers, preauthorization hurdles, and limitations on covered services. Contracting with SBHCs for behavioral health services remains a problem, as many plans typically subcontract the behavioral health portion, and some subcontractors remain unwilling to include SBHCs. The DPH and DSS have worked together to identify barriers to the contracting process and to facilitate a resolution to the problems mentioned above. All SBHCs have been able to contract for primary care and continue to pursue mental health sub-contracts.

<sup>106</sup> Maximus, Inc. *Summary report: Medicaid client utilization and satisfaction survey*, Prepared for the Children’s Health Council, 1996.

<sup>107</sup> Wolfe SH. *Present and Projected Dental Provider Participation in the Connecticut Medicaid Managed Care Program: Impact on Dental Care Access*. Hartford: Connecticut Department of Public Health; 1997 Feb.

<sup>108</sup> Andrews E. Memoranda summarizing dental rates. Prepared for the Medicaid Managed Care Council. 1997 April 18.

<sup>109</sup> Connecticut Department of Social Services. Memoranda on the impact of pediatric dental fee increases. 1995 April 13.

<sup>110</sup> Connecticut Departments of Public Health and Social Services. *Connecticut Access: Contracts Between Health Plans and School-Based Health Centers*. 1997 Mar. 26.

## EPSDT Requirements

The federal Early Periodic Screening, Diagnosis, and Treatment (EPSDT) program requires states to provide comprehensive screening, diagnosis and treatment benefits to all Medicaid beneficiaries under age 21. The program is designed to improve primary health benefits for children by emphasizing preventive care through distinct periodicity schedules for vision, dental, hearing, blood lead, immunizations, and developmental assessments.<sup>111</sup> States are required to meet a participation rate of 80%. Under the fee-for-service program, participation rates improved between FY's 1992 and 1994, but remained around 42% from FY 1994 to 1996.<sup>112</sup> Preventive dental assessments had actually declined from 29.7% in FY 1995 to 24.3% in FY 1996.<sup>113</sup> Data for the second quarter of 1997 however, show that participation rates have increased to 61%. While this is a big improvement, it is still below the federal goal of 80%.<sup>114</sup> EPSDT participation is expected to increase under managed care due to features like coordination of care by a primary care physician and utilization tracking by DSS. Additionally, participating health plans are required to provide these services to all eligibles under Connecticut's EPSDT program, "Healthtrack".

## Definition of Medical Necessity

In the Medicaid managed care program, children and families have been denied services based on a more limited interpretation of the definition of medical necessity than that held by DSS under the fee-for-service program.<sup>115</sup> This particularly affects children with special needs, because when they enter the managed care program, health plans typically review the services they are receiving and decide whether these services should be continued. Plans tend to make determinations about the nature and extent of services available to special needs children using the same medical necessity criteria that they use for children who do not have chronic or disabling conditions. For example, plans often judge children's occupational therapy, physical therapy, speech-language pathology services, and even mental health services as being educationally related and therefore not medically necessary, even though Medicaid has historically reimbursed these services.<sup>116</sup> Some decisions lead to reductions or discontinued care. The review has particularly caused restrictions on mental health and home health services.<sup>117,118</sup>

## Integrating Services Provided by State Agencies

Many families who participate in the Medicaid managed care program may also receive services from a variety of other health-related programs provided by the State like WIC, Healthy Start, Birth to Three, Healthy Families, Head Start, preschool, special education, and other child care programs. Relationships and coordination of care between health plans and these programs have not been established, leading to a loss of services to clients and a loss of money to the State, as the services have already been built into the premium base. For example, WIC recertification requires a six-month check up, but it is not part of health plans'

<sup>111</sup> U.S. Department of Health and Human Services, Health Care Financing Administration. *State Medicaid Manual, Part 5: Early and Periodic Screening, Diagnosis, and Treatment*. Washington, DC, 1990 April.

<sup>112</sup> Children's Health Council. *EPSDT Under Connecticut Access*. 1997 June 3.

<sup>113</sup> Children's Health Council, p. 6.

<sup>114</sup> Since initial publication of the *Assessment* in January, 1998, utilization reports submitted by plans to DSS show that median participation and screening rates for the second quarter of 1998 have further improved to 67% and 75% respectively. Adolescent rates (while improving as well) remain lower than the median.

<sup>115</sup> Medicaid Managed Care Council's Access/EPSDT Subcommittee, Meeting Minutes, December, 1996.

<sup>116</sup> Fox HB, McManus M. *Medicaid Managed Care for Children with Chronic or Disabling Conditions: Improved Strategies for States and Plans*. Maternal and Child Health Policy Research Center. 1996 July: 26.

<sup>117</sup> Lee MA. Prepared testimony to the Medicaid Managed Care Council on behalf of the Children's Health Council. 1997 January 29.

<sup>118</sup> Since initial publication of the *Assessment* in January, 1998, DSS expects to include a clarified definition of medical necessity into the new contracts expected to become effective February, 1999.

approved schedule of pediatric care.<sup>119</sup> Confusion resulting from the structural changes in the delivery of services and different interpretations regarding the scope of benefits have led families to seek services previously provided under the Medicaid fee-for-service system from state agencies (DCF, DPH, DMR) and non-profit agencies. Increased efforts to integrate these services are needed to achieve continuity of care through the appropriate funding mechanisms.<sup>120</sup>

### Grievance and Appeals Process

The grievance and appeals process is necessary to ensure consumer protection under managed care, as financial incentives to underutilized care exists. The Medicaid managed care program includes several mechanisms in this regard. Plans are required to have an internal grievance and appeals process in place. DSS provides clients the right to appeal through a fair hearing process, and by federal law, Medicaid recipients must be given an opportunity for notice and appeal prior to the reduction or termination of services. However, there has been confusion as to the timing of the fair hearing process. A review of health plan grievance and appeals descriptions by the Children's Health Council showed that the information on when to access DSS's process was inconsistent across plans.<sup>121,122</sup> Additionally, plans have not complied with the federal regulation regarding notice prior to the termination or reduction of services which has had a particular impact on children with special needs whose services have been reviewed under the plan's interpretation of medical necessity.<sup>123,124</sup>

### Delays in Newborn Eligibility Determination<sup>125</sup>

Delays in processing Medicaid eligibility for newborns has led to decreased access to medical services and screenings for infants regardless of the guarantee of immediate and continuous coverage under EPSDT. The problem primarily involves the assignment of a Medicaid number, which can take up to three months. Since providers cannot verify the plan to which these newborns belong, they are reluctant to provide services for the new client for fear that the service will not be reimbursed. Delays in enrollment are attributed to the combination of delays in hospital reporting of new births and delays in eligibility processing at DSS regional offices.<sup>126</sup>

### Medicaid Managed Care and Traditional Public Health Providers

Medicaid reimbursement is a major source of revenue for traditional public health providers (safety net providers),<sup>127</sup> and changes in the financing and delivery of Medicaid services are likely to affect these organizations. Before the Medicaid managed care program, safety net providers were able to provide primary

<sup>119</sup> Solomon J, Lee MA. *Evaluation of the Connecticut Access Medicaid Managed Care Program: Impact on Recipient Access to Quality Care*. Children's Health Council. Hartford, CT. 1997 April.

<sup>120</sup> Since initial publication of the *Assessment* in January, 1998, all participating health plans will be required to develop contracts with state and community-based organizations for coordination and appropriate funding of services. This provision will be part of the new contracts expected to be effective February, 1999.

<sup>121</sup> Solomon and Lee, 52.

<sup>122</sup> Since initial publication of the *Assessment* in January, 1998, DSS has developed a uniform grievance and fair hearing process that will be implemented in the next contract period expected to become effective February, 1999.

<sup>123</sup> Solomon and Lee, 56

<sup>124</sup> Since initial publication of the *Assessment* in January, 1998, DSS has issued policy transmittals and clarifications on the continuity of care and notice of action which has better enabled them to intervene and clarify a plan's responsibility when a conflict occurs.

<sup>125</sup> Solomon and Lee, 47-49.

<sup>126</sup> Since initial publication of the *Assessment* in January, 1998, DSS has moved eligibility processing to the central office in Hartford and has worked with hospitals to limit the processing to five days in most cases.

<sup>127</sup> Grogan C, Gusmano M. *The Status of Safety Net Providers in Connecticut: A Survey of Connecticut's Safety Net Providers*. Prepared for the Public Health Subcommittee of the Connecticut Medicaid Managed Care Council. 1997 March. Safety net providers are identified as community health centers, school-based health centers, child guidance clinics, local health departments, non-profit visiting nurse associations, family planning clinics, and public dental clinics.

care to uninsured or underinsured residents by depending heavily upon Medicaid reimbursements and cost-shifting from paying patients. As the Medicaid program moved from fee-for-service to capitated payments, traditional providers have experienced a decline in reimbursement, either because they have been unable to secure contracts with MCOs (or have contracts to provide only a subset of services) or if contracts exist, they have had to negotiate rates individually with MCOs.<sup>128</sup> Lower rates threaten the financial viability of safety net providers when service levels are maintained, but they may also cause a change in the number and types of services provided and the number of uninsured patients seen. As long as federal and state financing policies do not address the uninsured, the safety net providers remain essential for access to primary care services for the uninsured and underinsured. A comprehensive discussion of safety net providers in Connecticut can be found in Appendix G.

### Quality Oversight

As administrator of the Medicaid managed care program, DSS has primary responsibility for ensuring that quality services are provided to Medicaid clients. DSS follows HCFA's Quality Assurance Reform Initiative (QARI) guidelines, and as required by HCFA, has developed an independent external quality assurance program.<sup>129</sup> DSS also requires quarterly reporting by participating plans. Additionally, the Children's Health Council, created by the Legislature in 1995, provides independent quality oversight of children's health issues.

DSS has contracted with Qualidigm (formerly CPRO) for the independent external quality assurance program. Their major responsibilities will include completing a contract compliance audit with site visits to MCOs, constructing a data base, and conducting patient-focused studies.<sup>130</sup> The first focused study is on pediatric asthma. Because the contract with Qualidigm was initiated over a year after implementation of the managed care program, a significant delay in developing an operational quality assessment program has resulted.

The Children's Health Council has been particularly active in monitoring and evaluating health plan compliance with EPSDT requirements. EPSDT is one of the few areas for which a fee-for-service baseline exists to compare the performance of EPSDT in the managed care program. The Council is an advocate for children under the age of 21, and provides education, information, and individual casework services for coordination of care and access problems for this population.<sup>131</sup> The Council also provided an independent evaluation of the quality and access components of the Medicaid managed care program. Many of the issues brought forth by this review have been described in "Ongoing Issues" in this chapter.

Information on the utilization of services by Medicaid managed care enrollees is received mostly through self-reported quarterly reports from the health plans and through the use of encounter data. Regarding the quarterly reports, data are available on pap smears, mammograms, low birthweight, behavioral health, EPSDT, inpatient and emergency room use, prescriptions, vision, and dental exams.<sup>132</sup> However, reporting compliance by health plans has been somewhat problematic, with much of the data missing, late, or incomplete. This however, is beginning to improve. Data collection on other important elements such as immunization rates is still in process, and reports are expected shortly.<sup>133</sup> Encounter data have been reported to both the Children's Health Council and Qualidigm since 1996 and will be used increasingly by Qualidigm for focused studies. The quality of the data however, is at issue and Qualidigm will use medical record audits to verify completeness and accuracy.

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<sup>128</sup> Grogan and Gusmano, 2.

<sup>129</sup> Linnane J, Griffis A. Connecticut Department of Social Services. Personal communication. 1997 April 14.

<sup>130</sup> Children's Health Council. Meeting Summary. 1997 May 12;3.

<sup>131</sup> Lee M. Children's Health Council. Personal communication. 1997 April 21.

<sup>132</sup> Connecticut Department of Social Services. Correspondence to the Medicaid Managed Care Council. 1997 May 9.

<sup>133</sup> Lee M. Children's Health Council. Personal communication. 1997 August 25. Since initial publication of the Assessment in January, 1998, reports of immunization rates are still in process but are expected shortly.

Data partnerships between DSS, the health plans, and other state agencies, particularly the public health and mental health agencies, would help to improve the accuracy and timeliness of the data reporting. Such partnerships are essential for reducing duplicative efforts in data collection and monitoring. In addition, the evaluation of the QARI demonstration project indicated that coordination of data requests and data partnerships were key for health plans concerned with the burden of multiple overlapping reviews and requests.<sup>134</sup> An initiative to link public birth records with DSS and managed care plans' enrollment files would enable evaluation of prenatal care and birth outcomes using the official state birth record. The birth records contain information on the number of prenatal care visits and the necessary information to provide rates of low birthweight or Cesarean sections. Coordinating public health information systems including linkages with death records, hospital discharge records, and the State's cancer registry could also be used to further evaluate and report on the health of Connecticut's Medicaid managed care population.

### Integrated Care for Dually Eligible Individuals

As of August 1997, Connecticut was developing a Section 1115 Research and Demonstration Waiver proposal, that would create a managed care model for financing and delivery of health care services to older persons and persons with disabilities who are dually eligible for Medicaid and Medicare. The program was being developed by DSS to address cost issues related to this population. In Connecticut, 16% of the Medicaid population are dually eligible (about 43,000 individuals), but these clients consume 51% of the Medicaid budget (about \$920 million).<sup>135</sup> Ninety-one percent of the dually eligible are 65 years of age and older and 9% are young adults with disabilities. The majority of funds are allocated to long term care services in institutions.

In response to concerns raised that seeking a Section 1115 waiver was too comprehensive, DSS was directed to scale back to a pilot project. This pilot project is called Connecticut Lifelong Care (CTLTC).<sup>136</sup> The CTLTC is modeled after the national program known as the Program for All-inclusive Care for the Elderly (PACE). It will offer nursing home qualified adults who are age 55 and older and eligible for both Medicare and Medicaid benefits the opportunity to remain in the community. The program's goal is to improve coordination of community based services in order to delay or prevent more costly institutionalized care. Two CTLTC centers, one in Hartford (Hebrew Home and Hospital) and one in New Haven (Masonicare), will be responsible for the coordination and delivery of an integrated benefit package of Medicaid and Medicare services under a capitated rate. The centers are scheduled to begin offering services in late 1999. The program is voluntary, but the incentive to join the program lies in the increased availability of community-based services to replace care provided in institutions, and the expectation of better coordinated services. DSS expects approximately 300 individuals to enroll during the first two years of operation. At the end of the fifth year, DSS expects that expansion activities will result in approximately 2,000 participants in the program.

The PACE program has demonstrated success in managing enrollee care, quality of care, and client satisfaction. For example, the rate of hospital use is lower than that of the Medicare 65+ population which includes healthy older persons, and PACE enrollees have shorter length of stays in the hospital than the aged Medicare population as a whole.<sup>137</sup> In 1997, a review by Abt Associates for HCFA reported improved health status and quality of life including lower mortality rates among PACE enrollees.<sup>138</sup> In terms of satisfaction, enrollees generally remain in the program until death with only about 3% disenrolling due to dissatisfaction.<sup>139</sup>

<sup>134</sup> Felt-Lisk S, St. Peter R. Quality assurance for Medicaid managed care. Reprint from *Health Affairs*. 1997 May/June;16(3):249.

<sup>135</sup> Connecticut Department of Social Services. Integrated Service Networks in Connecticut, Survey and Information Request.

<sup>136</sup> Technical information on the Connecticut Lifelong Care Program was provided by the Connecticut Department of Social Services, Integrated Care Unit.

<sup>137</sup> National PACE Association. *Success to date of the PACE replication*. 1997 Oct.

<sup>138</sup> National PACE Association.

<sup>139</sup> On Lok, Inc. *PACE fact book*. 2nd. ed. San Francisco: Onlok, Inc., 1996.

As noted above, PACE programs have had documented success, but the use of managed care techniques with disabled and elderly populations warrants close monitoring in terms of access to services and quality of care. The population eligible for PACE programs often have chronic conditions needing frequent, specialized services, and this must be balanced with the financial incentives provided under capitation. Several studies document that HMOs operating under a capitated rate reduce utilization, hospital admission rates, length of stays, and use of expensive technologies.<sup>140</sup> A recent study found that 54% of patients 65 years of age and older who were treated in HMOs reported a decline in health, compared with 28% of those in fee-for-service plans.<sup>141</sup> Likewise 22% of poor patients treated in HMOs reported improvements in health compared with 58% in fee for service. While PACE programs are not HMO models, they are similar in that they manage care for enrollees under a capitated rate. The financial incentives under a capitated model need to be properly assessed and managed to ensure that elderly and poor clients of the state receive appropriate, high quality services.

### Managed Care Regulation

In 1996, the Connecticut General Assembly vigorously debated a comprehensive managed care bill that would have given the state's public health agency broad oversight of quality and consumer protection related to managed care organizations. The major provisions of the bill included a certificate of authority program, stronger oversight of utilization review and appeals, on-site inspections, HEDIS data collection, and the collection and dissemination of consumer information. While this measure did not pass, a bill mandating coverage for 48-hour maternity stays was signed into law. A provision was also included that prevents health insurers from refusing to cover women who previously had breast cancer, provided that the woman has been cancer free for five years.

In 1997, the General Assembly passed a bipartisan bill (Public Act 97-99) which is less comprehensive than the 1996 proposal. The Act provides the state's Department of Insurance with broad oversight of managed care organizations and utilization review companies. The major components of the Act include increased, standardized consumer information, the development of an external appeals process to the State for services that have been denied, guidelines for utilization review and medical protocols, and HEDIS data collection from licensed health plans in the state. Other managed care bills receiving approval in 1997 include requiring health plans to pay for at least 48-hour hospital stays after a mastectomy or lymph node dissection.

## POLICY ISSUES

### Quality Assurance

Quality assurance in a managed care environment is particularly important given the financial incentives to limit care. Currently, the debate on quality centers on performance measurement or how best to hold health plans accountable for the health status of their members. Performance measurement may include:

- Structural indicators such as accreditation status or the proportion of physicians who are board certified;
- Licensure status of institutions as well as health care practitioners;
- Process measures, which address the rate at which interventions are performed, such as mammography or blood pressure screening, or immunizations;
- Health outcomes, or those effects that patients actually experience, such as death, disability, or satisfaction with the care provided.

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<sup>140</sup> Ware JE, Bayliss MS, Rogers WH, Kosinski M, Tarlov AR. Differences in 4-year outcomes for elderly and poor, chronically ill patients treated in HMO and fee-for-service systems. *Journal of the American Medical Association* 1996; 276(13): 1039-1047.

<sup>141</sup> Ware JE et. al., 1039.

Performance measurement most often occurs around plan processes that are focused on preventive services, as most experts feel, “what gets measured, gets done.”<sup>142</sup> But the issue within quality assurance is how to measure patient outcomes and more sophisticated clinical outcomes that go beyond mortality like readmission rates or infection rates. Problems cited in measuring outcomes include turnover in plan membership, which causes difficulty in tracking patients, and the effect on outcomes of other factors that are out of the plan’s control, like severity of disease.<sup>143</sup> Measuring patient outcomes will become more important in the future because the purpose of the health care system is to improve health outcomes and health outcomes are a gauge for how well a health plan is performing.

### *NCQA and HEDIS*

Several efforts are underway that reflect increased attention to quality of care in a managed care environment. These include the NCQA (National Committee for Quality Assurance) accreditation standards and the HEDIS performance measures. NCQA is a not-for-profit organization that evaluates and reports on the quality of managed care plans in six general areas: quality management and improvement, utilization management, credentialing, members’ rights and responsibilities, preventive health services, and medical records.<sup>144</sup> HEDIS is a set of standardized performance measures for comparing the performance of managed care plans.<sup>145</sup> NCQA’s accreditation program uses HEDIS data to help evaluate the quality of managed care plans. The 71 HEDIS reporting measures and 33 testing set measures are listed in Appendix H.

Consensus among managed care plans, employers, and government agencies appears to be developing around the use of the HEDIS performance indicators as a foundation for quality oversight.<sup>146</sup> In 1996, more than 330 health plans across the country were producing HEDIS statistics, and more than 50% of the large corporations that purchase managed care benefits were using HEDIS data to help guide their managed care purchasing decisions.<sup>147</sup> While it is appropriate to focus on improving quality of care under managed care arrangements, the same standard of care should apply for all patients; high quality care should be the same no matter who is paying for that care.

### *Model Quality Monitoring Programs and Performance Improvement Systems*

Despite the ongoing quality efforts, no quality monitoring program or performance improvement system has been defined as a standard. Two quality monitoring programs are identified below and could be considered as a framework for a model program.

Yale University School of Medicine’s Department of Epidemiology and Public Health prepared an independent report for DPH entitled, *A Blueprint: State Government’s Role in Quality Assessment and Performance Improvement for Managed Care in Connecticut*.<sup>148</sup> The report provides recommendations for components of a State program that oversees the quality of managed care organizations. These recommendations, however, have not been adopted by the State and are not formally used by any Connecticut health system.

In 1991, HCFA’s Medicaid Managed Care Office initiated QARI to design a more credible approach to monitoring and improving the quality of managed care services for Medicaid recipients.<sup>149</sup> QARI

<sup>142</sup> Harris JR. “Prevention and Intervention.” *Widening the Quality Circle, 1996 Annual Report*. <http://www.ncqa.org/ar96.htm>. (14 Mar. 1997). NCQA cites HealthPartners in Minneapolis where the immunization rate was steady until HEDIS measures were used.

<sup>143</sup> Eddy DM. *Outcomes: Excerpt from Widening the Quality Circle: 1996 Annual Report*. <http://www.ncqa.org/ar96.htm>. (14 Mar. 1997).

<sup>144</sup> National Committee for Quality Assurance. *1997 NCQA Standards for Accreditation*. 1997 April.

<sup>145</sup> National Committee for Quality Assurance.

<sup>146</sup> The Association of State and Territorial Health Officials. *Ensuring And Improving The Quality Of Care In A Managed Care Environment.. Managed Care Monograph Series*. Washington D.C. 1995 November;2.

<sup>147</sup> National Committee for Quality Assurance. *HEDIS 3.0 Draft for Public Comment*. 1996 July;10.

<sup>148</sup> Grogan CM, Horwitz SM, Schlesinger M. *A Blueprint: State Government’s Role in Quality Assessment and Performance Improvement for Managed Care in Connecticut*. Yale University School of Medicine’s Department of Epidemiology and Public Health. 1996 April.

<sup>149</sup> Booth M, Fuller E. *Quality Improvement Primer for Medicaid Managed Care Final Report*. National Academy for State Health Policy. 1995 June;1.

establishes five key elements of a health care quality improvement system (HCQIS).<sup>150</sup> The QARI framework is similar to the Yale *Blueprint* recommendations in that each requires internal and external quality reviews, focused studies, and an external grievance process. HCFA has contracted with the National Academy for State Health Policy to conduct a new project, the quality improvement system for managed care (QISMC), to replace QARI.<sup>151</sup> QISMC, which applies to both Medicare and Medicaid, will define and elaborate what HCFA's expectations are with regard to internal quality assessment and performance improvement, including the development of unified standards and reviewer guidelines.<sup>152</sup>

Appendix I provides a comparison of public quality oversight programs (Medicare, Connecticut's Medicaid program, the Connecticut State employee health plan, and oversight of managed care plans through Connecticut Public Act 97-99) with Yale's recommendations for a quality monitoring program. Assuming that the State and federal government actually implement their quality initiatives effectively, their oversight initiatives generally match up well to Yale's recommended system. State oversight (through Public Act 97-99) for Connecticut's commercial populations enrolled in managed care are not held to these same standards.

### *Quality Oversight in Connecticut*

Significantly less quality oversight by the State occurs for the commercial population than for those enrolled in public programs (Appendix I). Additionally, quality oversight in Connecticut is fragmented across several agencies. DSS is responsible for the quality oversight of the Medicaid Managed Care program. DPH oversees the quality of care provided to individuals by institutional and individual providers, but does not include managed care organizations. The oversight consists of State licensing and/or federal certification (Medicare/Medicaid) of health care providers and institutions including, but not limited to, hospitals, nursing homes, ambulatory services, home care services, behavioral health services, intermediate care facilities for the mentally retarded, clinical laboratories, investigation of complaints, determining if minimum standards as defined in state and federal laws and regulations are met and institution enforcement actions, as necessary. Finally, the Department of Insurance (DOI) regulates health insurers and health maintenance organizations to ensure they meet licensing and financial solvency standards, reviews and approves rates and policies, handles complaints, and oversees companies' conduct in the marketplace.<sup>153</sup> DOI also licenses utilization review companies, oversees guidelines for notification of utilization review (UR) decisions and specifications for appeals procedures, and acts as an ombudsman for consumers regarding review of denied appeals. DOI's responsibilities for oversight of both managed care organizations and utilization review companies has been expanded through Public Act 97-99 (referred to under "Managed Care Regulation" earlier in this Chapter).

### Utilization Review

Utilization review has become an issue within managed care and quality assurance due to its function of assessing medical necessity and appropriateness of health care services and treatment. Connecticut HMOs commonly use Milliman & Robertson Healthcare Management Guidelines to determine appropriateness for patients having no complications.<sup>154</sup> However, the guidelines may be used inappropriately as a cost containment tool (e.g. by limiting individual patients' utilization) rather than as a mechanism to enhance quality by reducing variations in physician's practicing patterns. The guidelines are also criticized for not considering the infrastructure of Connecticut's health care system and its ability to provide the outpatient

<sup>150</sup> U.S. Department of Health and Human Services, Health Care Financing Administration, Medicaid Bureau. *A Health Care Quality Improvement System For Medicaid Managed Care A Guide for States*. 1993 July 6;7-11.

<sup>151</sup> Macrae A. U.S. Department of Health and Human Services, Health Care Financing Administration, Office of Managed Care. Personal communication. 1997 June 3.

<sup>152</sup> Macrae A. Personal communication. 1997 June 3.

<sup>153</sup> Connecticut General Assembly, Legislative Program Review and Investigations Committee. *Regulation and Oversight of Managed Care*. Hartford, CT, 1996 December; 22.

<sup>154</sup> Connecticut General Assembly, Legislative Program Review and Investigations Committee. *Regulation and Oversight of Managed Care*. Hartford, CT, 1996 December; 77-78.

and follow-up services that are often prescribed as alternatives to inpatient care, or a patient's family's capacity to provide home care and support when hospital stays are limited.

### Integrating Managed Care with Public Health

As the health system and the financial incentives to providers change, several issues arise concerning how public health and managed care should interact. First, there is a concern that individuals may not be accessing preventive health services as they should. A recent analysis of pediatric immunization rates among Medicaid managed care organizations showed that close to 30% of children born in 1994 and 1995 were not being tracked.

Second, the public health concept of improving health status could be integrated into the incentives of the emerging financing and delivery systems. Because the goal of MCOs is to maintain the health and manage the care of their enrollees, this can be achieved by incorporating health promotion and disease prevention activities into the mainstream of care. Another way this can be achieved is through broadening the scope of preventive services and treatments offered. For example, most MCOs do not cover nutrition services, though optimal nutrition can prevent disease, reduce risk of illness, enhance recovery and reduce complications, and promote general health and well being.<sup>155</sup> Some MCOs have already begun to establish wellness programs that offer discounts at health clubs, prenatal self care, and weight loss programs. MCOs can also influence participating physicians to incorporate health promotion and disease prevention activities into routine patient care by providing financial incentives and educational tools for them to focus on a patient's personal health practices like exercise, diet, and stress reduction. These activities may be more valuable in improving overall health than more commonly used clinical methods of prevention such as screenings for early disease.<sup>156</sup>

Finally, some traditional public health services such as the provision of vaccines, laboratory services, and outreach services could be transferred to MCOs to provide to their enrollees. It will be important for public health agencies and advocates to monitor managed care closely to determine its effect on preventive services delivery and outcomes. And while it may be possible for the public health sector to shift some costs of delivering preventive care to MCOs, a corresponding reduction in the public's health should not follow. It will be important to determine not only which health services should be appropriately shared with MCOs, but also how successfully managed care delivers those services.

#### *Community Benefits*

For health problems such as substance abuse or violence, broader efforts like school-based programs or community education may be more effective than individual services.<sup>157</sup> For these health problems, plans have an incentive to invest in community programs that prevent health problems. Theoretically, keeping the community healthy will lower utilization of health services over the long run, particularly if the health plan services a large proportion of a given community. Assessing the community's health problems and designing programs to prevent their occurrence may be a more cost-effective way for plans to eliminate unnecessary health problems or injuries, while improving health outcomes and the overall health status of the community.

Although managed care plans are increasingly designing wellness programs for their enrollees, very few offer these activities to the community at large. In Massachusetts, the Attorney General's office has developed a set of guidelines to encourage HMOs to promote community health. (See Appendix J). The guidelines support the development of community benefit plans by HMOs operating in the state and encourage HMOs to identify and meet community health needs in their market area.

## UNINSURED AND UNDERINSURED POPULATIONS

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<sup>155</sup> American Dietetic Association. Cost effectiveness of medical nutrition therapy. *Journal of the American Dietetic Association*. 1995 January.

<sup>156</sup> United States Preventive Services Task Force, *Guide to Clinical Preventive Services*, 2nd edition. (Baltimore, MD: 1996).

<sup>157</sup> United States Preventive Services Task Force, 32.

Providing personal health services to the uninsured and underinsured has become an issue because 1) the numbers of uninsured have increased over the past decade; 2) the decline in employer-based coverage leaves many working families without insurance coverage; 3) Hispanics are more likely to be uninsured than any other ethnic group; and 4) the underinsured are thought to represent a much higher proportion of the population than previously estimated.

The uninsured are those who have no health insurance. Usually, a fairly reliable estimate of their numbers can be developed through surveys. The underinsured, those with inadequate health insurance coverage,<sup>158</sup> are a more difficult group to measure because of the difficulty in defining “inadequate”, and difficulties in obtaining detailed data on an individual’s insurance status.<sup>159</sup> However, for the years 1987 and 1994 it was estimated that 19% of the privately insured population under age 65 are underinsured if faced with a catastrophic illness.<sup>160</sup> This is an increase from a comparable estimate in 1977 of 13%.<sup>161</sup> Additionally, most patients having trouble paying their medical bills are insured.<sup>162</sup>

### The Uninsured Population

The percent of the U.S. population lacking health insurance has been increasing over time (Figure 2-1), and it is uncertain whether this trend will continue. Some indicators like the erosion of employer-based health insurance and conservative social policies such as cutbacks in Medicaid and welfare, point to further increase,<sup>163</sup> but incremental policies, e.g., the State Children’s Health Insurance Program (CHIP) and the Health Insurance Portability and Accountability Act (described previously under “Healthcare for Uninsured Kids and Youth (HUSKY) and Appendix K respectively) may mitigate this increase somewhat. Those uninsured today, however, may be faced with more limited sources of free care because of a diminishing safety net of providers, as discussed previously in this Chapter. For Connecticut, there has been a general rise in the state’s uninsured population through 1994 which appears to have stopped in 1995. The decline can, in part, be attributed to Connecticut’s robust economy after several years of recession; however, more data are needed to determine if this is a trend or one time occurrence.<sup>164</sup>

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<sup>158</sup> In general this term refers to individuals who are exposed to significant financial losses or are unable to obtain needed care due to limited insurance coverage. Office of the Comptroller, State of Connecticut. *Health Care in Connecticut: The Uninsured, Health Care Financing, Access and Uncompensated Care*. 1996 Sept 10.

<sup>159</sup> Weissman J. Uncompensated hospital care: will it be there if we need it? *Journal of the American Medical Association* 1996 Sept;276(1):823-828.

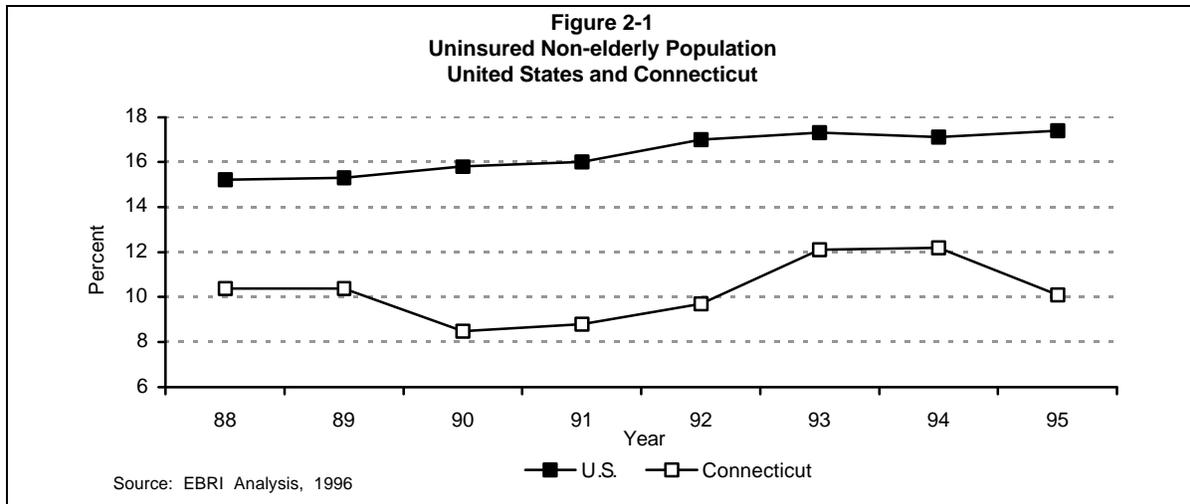
<sup>160</sup> Short PF, Banthin JS. New estimates of the underinsured younger than 65 years. *Journal of the American Medical Association* 1995 Oct; 274(16): 1302-1306.

<sup>161</sup> Short and Banthin, 1304.

<sup>162</sup> Weissman, 823.

<sup>163</sup> Davis K. Uninsured in an era of managed care. *Health Services Research* 1997 Aug 31(6):641-649.

<sup>164</sup> The Connecticut General Assembly’s Legislative Program Review and Investigations Committee, State of Connecticut. *Regulation and Oversight of Managed Care*. Hartford, CT, December, 1996.



### The Decline in Employer-Based Coverage

Since the end of World War II, employment has been strongly associated with health insurance coverage. Since the 1970's, however, employer sponsored health insurance coverage has been declining steadily.<sup>165</sup> Although 63.8% of non-elderly Americans in the U.S. were covered by an employment-based plan in 1995, there has been a steady decline since 1988 (Figure 2-2).<sup>166</sup> The shift in employer-based coverage has indirectly affected insurance coverage to children.<sup>167</sup> Of the 10 million uninsured children in 1994, 25% of those with a parent working full time did not have private, employment-based insurance, and almost 12% of those with a parent working full time were uninsured.<sup>168</sup> Medicaid expansions of the early 1990's covered many poor uninsured children, but reaching children remains a problem. Millions of Medicaid eligible children are not enrolled.<sup>169</sup> The number of uninsured children has fluctuated between 12 and 14% since 1987. After rising steadily between 1992 and 1994 (Figure 2-3), the population of uninsured children declined in Connecticut in 1995; more data are needed to determine if this is a trend.

### Disparities Based on Race or Ethnicity

Large disparities in insurance coverage exist among races and ethnicities particularly among whites, blacks, and Hispanics. Whites comprise the majority of the non-elderly population, and have the highest rate of insurance coverage. Hispanics have the lowest rate. This may be related to the fact that a majority of the Hispanic population reported incomes below 200% of the federal poverty level, were less likely to be covered by private insurance, and were more likely to be noncitizens -- all factors associated with being uninsured.<sup>170</sup> In Connecticut, data from the BRFSS show more blacks lacking health insurance than Hispanics, but both groups have higher rates of being uninsured than whites.<sup>171</sup>

<sup>165</sup> Davis, 642.

<sup>166</sup> Employee Benefit Research Institute. *Sources of Health Insurance and Characteristics of the Uninsured: Analysis of the March 1996 Current Population Survey*. Washington, D.C.:EBRI;1996.

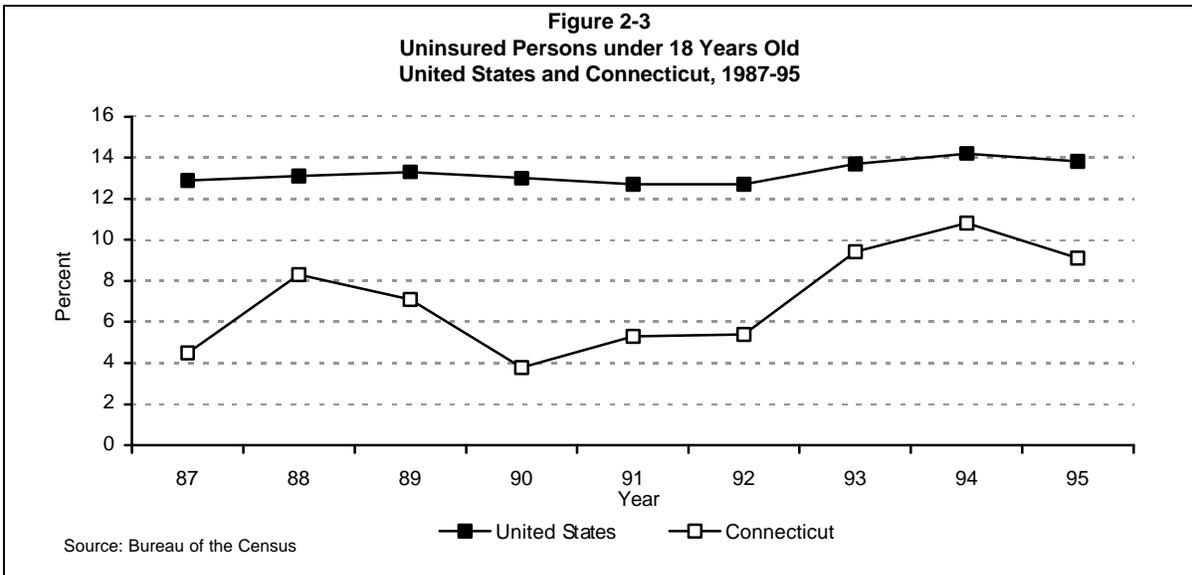
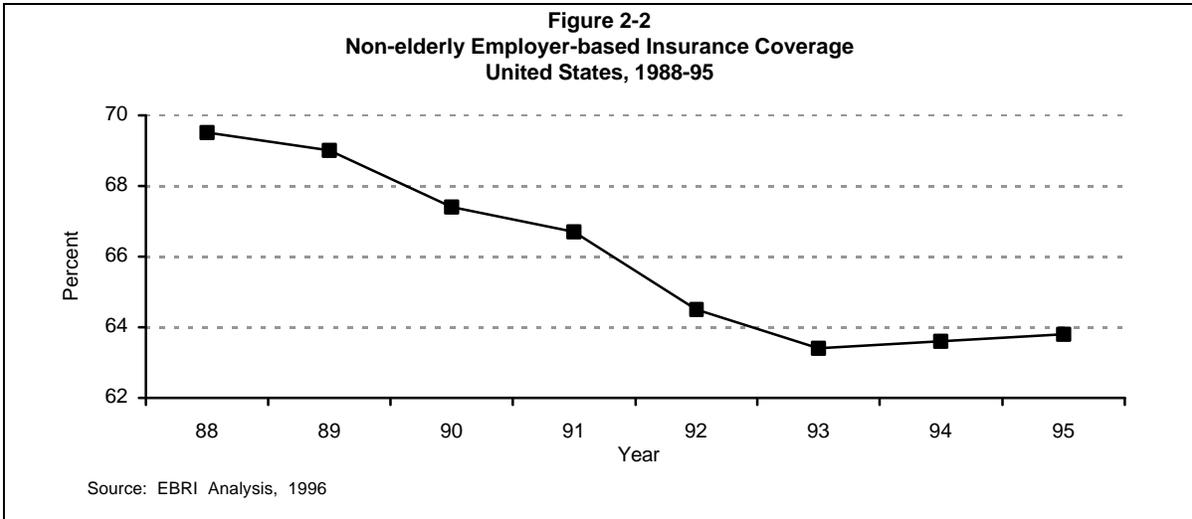
<sup>167</sup> Davis, 643.

<sup>168</sup> Employee Benefit Research Institute, 22.

<sup>169</sup> Summer L, Parrot S, Mann C. Millions of uninsured and underinsured children are eligible for Medicaid. Center on Budget and Policy Priorities; 1996 Dec. 10.

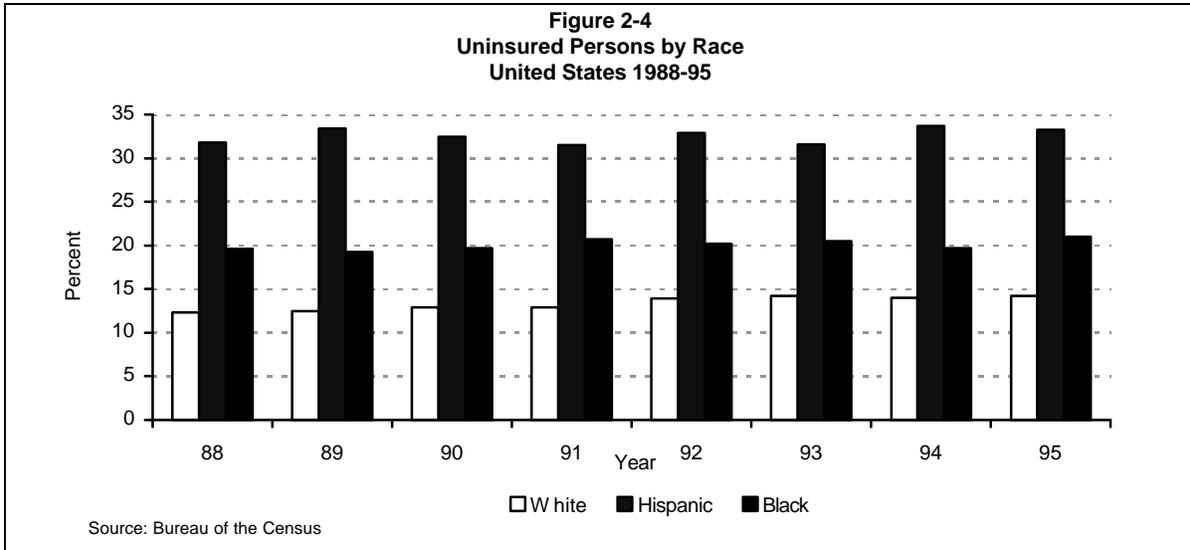
<sup>170</sup> Employee Benefit Research Institute, 19.

<sup>171</sup> Connecticut Department of Public Health, Bureau of Community Health. Behavioral Risk Factor and Surveillance System, *Statewide Survey Data: Health Care Coverage by Race*. Hartford, CT, 1992-95.



### Major Characteristics of the Uninsured

While the predominant risk factor for health insurance status is low income,<sup>172</sup> several other factors are involved. They include employment and race (previously discussed), the nature of employment, age, and marital status. For an employed individual, the nature of employment, the type of industry, and the size of the firm often determine the cost and extent of coverage. The self-employed and those employed by businesses with less than ten employees, are less likely to have coverage. Businesses in industries such as retail, construction, and agriculture are also less likely to offer coverage. Part-time workers are also less likely to be covered by employer-sponsored insurance.



The uninsured are typically under 64 years of age, as Medicare covers almost all those 65 and older. For those under age 64, most uninsured are adolescents and young adults between age 19 and 24, mostly due to losing coverage under a parent's policy, still being in school, or assuming that they will be healthy.<sup>173</sup> An important health issue facing adolescents is the transition to adult health care. This is particularly true for youth with special health care needs. Another age group is between 55 and 64 because employer-based coverage for retirees has fallen 23% between 1988 and 1994.<sup>174</sup> Singles and single parents are more likely to be uninsured than married couples, who may have two sources of income and greater chances of employment-based insurance.

While there is a lack of specific information on the major characteristics of Connecticut's uninsured, no data indicate that the national characteristics do not describe Connecticut's population. Likewise, the characteristics of the underinsured are considered similar to those of the uninsured population.<sup>175</sup>

### Consequences of Lacking Health Insurance

People without insurance coverage have more difficulty gaining access to personal health services and use less medical services than the insured.<sup>176</sup> The uninsured receive less ambulatory and inpatient care

<sup>172</sup> Davis, 642.

<sup>173</sup> Davis K, Rowland D. Uninsured and underserved: inequities in health care in the United States. *Milbank Memorial Fund Quarterly*. 1983;61(2):149-175.

<sup>174</sup> Davis, 645.

<sup>175</sup> Monheit AC. Underinsured Americans: a review. *Annual Review Public Health* 1994;15:461-85.

and, as a result, tend to have worse health status than insureds.<sup>177</sup> Persons without insurance often seek care later at a more advanced stage of disease and have higher mortality rates than the insured population.<sup>178</sup> This is demonstrated in cases of women with breast cancer in which early diagnosis and treatment are critical. Women without insurance are more likely than privately insured women to be diagnosed later, at a more advanced stage of the disease, and are 49% more likely to die during the 4 to 7 years following their initial diagnosis.<sup>179</sup> Without health insurance, many families face difficulties getting preventive and basic care for their children. Children without health insurance are less likely to be appropriately immunized, to get care for injuries, to see a physician if chronically ill, or get dental care.<sup>180,181</sup>

The lack of insurance coverage affects society as a whole by reducing productivity. Dental conditions, for example, account for an estimated 51 million hours of school lost by children and 164 million missed hours of work annually for adults.<sup>182</sup> The lack of health insurance places a financial strain on hospitals, physicians, and other health care providers who provide care to the uninsured. Much of this care is unreimbursed and is relatively costly due to the expensive settings in which care is sought (emergency rooms) or the late stage of illness. This cost is shared by all payers including individuals, through higher health insurance premiums and medical service charges, and loss of funds that could be used to support other services.

## HEALTH CARE FOR THE ELDERLY

Maintaining the health of individuals 65 years and older remains a serious challenge for the state and country. The increase in those aged 85 and older is of particular concern. While the state's population is projected to increase by only 9% from 1995 to 2020, the segment of the population aged 65+ will increase by 35%, and the 85+ age group by 78%.

These numbers are significant because the elderly are major consumers of health services, particularly costly acute, long term, and home health care services. Adults aged 65 and older, accounted for 34% of all Connecticut hospitalizations in 1995. If birth-related conditions are excluded, this age group composed 46% of hospitalizations. More than 60% of the patients hospitalized for heart disease, cerebrovascular disease, and pneumonia were in this age group. The hospitalization rate for injuries was four times greater for the elderly than for those under age 65.

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<sup>176</sup> Davis and Rowland, 165-168.

<sup>177</sup> Davis and Rowland, 160-165.

<sup>178</sup> Franks P., Clancy CM, Gold MR. Health insurance and mortality. *Journal of the American Medical Association* 1993 vol. 270, pp.737-741.

<sup>179</sup> Ayanian JZ, Kohler BA, Abe T, Epstein AM. The relation between health insurance coverage and clinical outcomes among women with breast cancer. *New England Journal of Medicine* 1993 July;329(5):326-331.

<sup>180</sup> Blumberg LJ, Liska DW. The uninsured in the United States: a status report. 1996 April.

<sup>181</sup> Families USA. Unmet needs: the large differences in health care between uninsured and insured children. Analysis of the 1994 National Health Interview Survey. Washington, D.C.: 1997 June.

<sup>182</sup> Gift HC, Reisine ST, Larach DC. The social impact of dental problems. *American Journal of Public Health* 1992 Dec; 82(12):1663-1668.

### Chronic Illness and Disability<sup>183</sup>

As the population ages, the prevalence of chronic health conditions will increase. Some chronic illnesses such as arthritis, diabetes, heart disease, and high blood pressure predominantly affect the elderly. Among people aged 65 to 84 years, chronic diseases such as arthritis, high blood pressure, and heart disease are the most prevalent and are the leading causes of disability. Among people aged 85 and older, chronic diseases continue to disable, but the combination of cognitive and sensory impairments (particularly visual impairment) cause as much disability as chronic disease. Chronic illness may begin in middle age, but as a person ages it progresses in severity and the degree to which it limits a person's activities. In 2020, there will be 12 million Americans aged 65 years and older with a limitation in a major activity due to a chronic condition. By 2020, 14 million elderly will need long term care - double the seven million who need long term care today.

One in five of the almost 50 million disabled Americans needs help with basic activities of daily living (ADLs) such as bathing, dressing, and eating, or instrumental activities of daily living (IADLs) such as household chores, laundry, and grocery shopping. The majority (58%) of these people are aged 65 and older. Comorbidity, the state of having more than one health condition at a time, puts people at greater risk of disability and can result in physical limitation, such as the inability to walk. The majority (69%) of people with more than one chronic condition are aged 65 and older.

### System Capacity

The health care marketplace is not supplying enough affordable, accessible services and products to help people with chronic conditions maintain an independent lifestyle. The proportion of people aged 65 and older who require assistance with dressing and toileting is 37%, bathing 36%, and eating 31%.<sup>184</sup> According to the 1984 National Long Term Care Survey, based on 6,000 people living in the community and 1,700 people living in institutions, one-third of the disabled elderly who live in the community have unmet needs with ADLs.<sup>185</sup> Nearly one million elderly people, for example, needed handrails in their residences, but did not have them. Lack of this assistive device increases the risk of falling, a prominent risk factor for injury and further deterioration of health. Unless individuals receive support for these needs to maintain an independent lifestyle, the health care system will be burdened by patients with multiple chronic conditions and personnel, resources, and financing will be strained.

### Caregiving and Family Support<sup>186</sup>

The demand for caregiving will increase as the elderly population increases, particularly among people aged 85 years and older. However, the supply of caregivers is decreasing due to decreasing birth rates and smaller family networks with older family members. Additionally, women have entered the work force in increasing numbers since the 1960s and are no longer as available as they once were to serve as unpaid family caregivers. As the average family size decreases, fewer children will be available for caregiving, and sibling support networks will decrease in size. In 1990, the ratio of the population in the average caregiving age range of 50 to 64 years, to the population aged 85 and older was eleven to one. By 2050, there will be only four potential caregivers for every elderly person.<sup>187</sup>

## FINANCING LONG TERM CARE

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<sup>183</sup> The Robert Wood Johnson Foundation. *Chronic Care in America: A 21st Century Challenge*. Princeton, NJ: The Foundation, 1996.

<sup>184</sup> The Robert Wood Johnson Foundation, 57.

<sup>185</sup> The Robert Wood Johnson Foundation, 58.

<sup>186</sup> The Robert Wood Johnson Foundation, 62.

<sup>187</sup> The Robert Wood Johnson Foundation, 64.

Long term care services for people aged 65 and older are funded by several sources, including state and federal governments, self-payment, and private insurance. In 1987, federal and state governments paid 41% of the costs of chronic care, excluding nursing facility care, private insurance paid 33%, and individuals paid 22% out-of-pocket. In contrast, federal and state governments paid only 19% of the cost of acute health conditions, private insurance paid 45%, and individuals paid 29%.<sup>188</sup>

The availability of public funds for long term care influences the services available and the settings in which they are delivered. Funding mechanisms favor institutional care with fewer resources applied to home and community-based services. Community-based services, often necessary to prevent institutionalization, may only be provided by public sources through a federal waiver of the Medicaid program.

In Connecticut, the majority of long term care resources are used to pay for institutional care (more than 8% of the State General Fund budget in FY 1995). The Connecticut Home Care Program (CHCP), which is the primary vehicle used by the State to provide home and community-based services to frail people aged 65 and older, consumed less than 1% of the State General Fund budget.<sup>189</sup>

The fact that Medicare, contrary to popular belief, does not finance most nursing facility and home care services, has led to public confusion and a general lack of preparation for the potentially catastrophic financial risk of paying for chronic care. As few people have private long term care insurance to cover the high cost of nursing facility care, many chronically ill people deplete their savings. They become impoverished and therefore eligible for Medicaid. Recent data indicate that Americans pay 33% of the total cost of nursing facility care out of pocket (\$23 billion).<sup>190</sup> Medicaid's expense of \$36 billion represented 52% of total expenditures in that area. In FFY 1995, the payer for the majority of Connecticut nursing facility residents was Medicaid (66%), followed by private-pay (20%) and Medicare (10%).<sup>191</sup>

For reasons noted above, private long term care insurance is a small but growing source of financing for nursing facilities and home care. Although the private insurance market may continue to expand, many policymakers believe private insurance alone cannot be relied upon to resolve financing problems in nursing facility care, home care, and other chronic care. Several innovations in long term care financing have emerged and are being tested. Among them are the long term care partnership models such as the Connecticut Partnership for Long Term Care (CPLTC), which combine private long term care insurance with Medicaid funds at the state level. Medicaid is expected to break even on nursing facility expenditures in the early years of the CPLTC, with savings increasing to 6.8% per year by 2020.

As noted above long term care costs have led to a financial strain on both federal and state governments. New financing mechanisms are being demonstrated and evaluated both nationally and at the state level. Other strategies used to constrain long term care costs in Connecticut include limits on nursing facility beds, increased use of home and community-based services, and the marketing of private long term care insurance.

### Limits on Nursing Facility Beds

The goal of the state moratorium on new nursing facility beds, which was established in 1991, is to reduce nursing facility utilization. While the total number of licensed beds has remained stable, the proportion of rest homes with nursing supervision (RHNS) beds is decreasing. The loss of RHNS beds can be attributed primarily to the conversion of RHNS beds to the higher chronic and convalescent nursing home (CCNH) level of care. The decrease in RHNS beds may affect access to nursing facilities by those in need of less intensive nursing care. Nevertheless, the State Nursing Home Task Force recommended continuing the moratorium, which is scheduled to remain in effect until 2002.

<sup>188</sup> The Robert Wood Johnson Foundation, 44.

<sup>189</sup> Connecticut General Assembly, Legislative Program Review and Investigations Committee, State of Connecticut. *Services for the Elderly to Support Daily Living* Hartford, CT, December 1996.

<sup>190</sup> The Robert Wood Johnson Foundation, 44.

<sup>191</sup> Connecticut Department of Public Health, Office of Policy, Planning and Evaluation. Nursing Facility Registry. Hartford, CT, 1995.

### Home and Community-Based Services

Nursing facilities are a particularly costly segment of the chronic care continuum, a primary reason most reforms in the chronic care system include methods to help people remain independent and out of institutions as long as possible. In State Fiscal Year (SFY) 1995, the average monthly cost per CHCP client was \$948, below the average monthly Medicaid nursing facility rate of \$3,268. While home and community-based services are less costly per person, their use has increased demand for home and community-based care. Home care expenditures almost doubled between 1990 and 1993.<sup>192</sup>

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<sup>192</sup> The Robert Wood Johnson Foundation, 52.

# CHAPTER 3

## HEALTH STATUS AND RISK REDUCTION

### INTRODUCTION

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Chapter 3 profiles key aspects of the health status of Connecticut residents and associated indicators of risk for disease and injury. Those indicators that are central to improving the health of the Connecticut population over the next five to ten years are emphasized.

Because public health seeks to prevent the occurrence of disease and injury, it inherently involves planning. Risk reduction efforts are intimately connected to health outcomes. For example, immunizations of two year olds have a direct effect on measles outbreaks; and the reduction of risk behaviors, such as excessive drinking and smoking, affects the rates of cardiovascular disease and lung cancer. Over time, successful prevention activities have reduced disease incidence in certain areas and shifted the focus of public health monitoring to risk reduction efforts. Vaccine-preventable diseases clearly illustrate this trend. In 1960, more than 11,000 cases of measles were reported in Connecticut, but after the licensing of vaccines and the requirement that children be vaccinated prior to school enrollment, rates dropped dramatically; the 1994-95 rate was only two cases per year. Both components - health status and risk reduction monitoring - exemplify essential, complementary, public health activities.

This chapter focuses on population-based health assessments. This perspective differs from the individual or clinical perspective in several ways. Populations are typically discussed in terms of events or cases per unit population, rather than event or case counts alone (e.g., cases per 100,000 population rather than number of cases without reference to the population base). This allows comparisons to be made among towns or states of different sizes. Most of the statistics in this chapter are presented as rates or percentages based on the size of the population of interest. A population-based approach also considers how common or prevalent a risk exposure is in a population, in addition to the severity of a risk exposure. Efforts to prevent a highly fatal, but rare condition may have less impact on the population than prevention of a less severe, but more common condition. In addition, the existence and efficacy of preventive measures is a critical component of planning effective interventions. In some cases, scientific knowledge may be insufficient to keep the disease from developing (primary prevention), whereas the disease might be treatable if it is diagnosed early (secondary prevention). Although the causes of breast cancer, for example, are too poorly understood to enable prevention activities, screening to detect the disease early in its development can reduce morbidity and mortality significantly.

The health indicators used in this chapter represent currently important population risks, significant challenges to existing public health prevention efforts, key emerging issues presenting current or anticipated challenges to the public health system, and major gaps in the public health surveillance infrastructure.

The arrangement of topics in this chapter generally follows the organizational structure of the Department of Public Health (DPH). The data are presented in nine sections: *Sociodemographic Profile*; *Consensus Health Indicators*; *Mortality Overview*; *Maternal and Infant Health*; *Behavioral Risks*; *Chronic Diseases*; *Injuries*; *Infectious Diseases*; and *Environmental and Occupational Health*. The information presented in all but the first two sections is discussed with regard to incidence or prevalence, time trends, high-risk populations, geographic variation, modifiable risk factors, and potential for intervention.

*Sociodemographic Profile* concerns the social and demographic factors that contribute to morbidity and mortality risks. The aging of the population has profound implications for public health, because the prevalence of chronic conditions and disabilities increases with age. Social class, for example, is strongly related to health insurance coverage, which influences access to and the quality of medical care. Educational level is strongly associated with income. The degree of inequality in income distribution is a predictor of mortality rates in infants, children, and adults. In addition, much of the disparity in various health indicators between those of black and white race can be explained by social class differences.

*Consensus Health Indicators* concerns the health status of Connecticut relative to other states. A consensus set of 18 health indicators were developed in 1991 by the U.S. Public Health Service to help communities assess their general health status and track progress toward their year 2000 objectives. The 18 indicators are those measures for which data are readily available, commonly collected for public health, and available at a local level. The latter is a particularly important consideration in a state such as Connecticut, where there are substantial local differences in health status.

*Mortality Overview* is a discussion of leading causes of death in Connecticut, viewed in terms of percentage of total deaths, age-adjusted mortality rates, and premature death (years of potential life lost up to age 65).

*Maternal and Infant Health* contains information about the key indicators of poor pregnancy outcomes (infant mortality, fetal deaths, low birthweight deliveries) and indicators of risk for poor outcomes (prenatal care, births to teenage mothers).

*Behavioral Risks* presents data from the Connecticut Behavioral Risk Factor Surveillance Survey on risk factors that are directly related to many chronic disease conditions. The risk factors include tobacco use, alcohol use and abuse, physical inactivity, blood pressure, blood cholesterol, diet, and overweight.

*Chronic Diseases* highlights non-communicable illnesses that are notable causes of morbidity and mortality in Connecticut, including diseases of the heart, cancer, chronic obstructive pulmonary disease, diabetes, dental caries, and osteoporosis.

*Injuries* considers both unintentional injuries (drownings, residential fires, falls, motor vehicle crashes) and intentional injuries (suicide, homicide, domestic violence, and injuries due to firearms).

*Infectious Diseases* presents data on selected communicable diseases of importance to public health in Connecticut. The diseases covered in this section are HIV/AIDS, primary and secondary syphilis, gonorrhea, chlamydia, measles, tuberculosis, Lyme disease, varicella, and certain foodborne diseases. Childhood immunizations, pneumococcal and influenza vaccines for adults, and drug-resistant *Streptococcus pneumoniae* also are considered.

Finally, *Environmental and Occupational Health* focuses on environmental risks (air pollution, hazardous wastes, contaminated drinking water) and disease (lead poisoning in children); job-related deaths, injuries, and diseases; and surveillance for birth defects.

# SOCIODEMOGRAPHIC PROFILE

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## POPULATION

The estimated July 1, 1995 population of Connecticut was 3,274,662, which was 12,454 (0.4%) lower than the July 1, 1990 census count of 3,287,116. The 1990 population distribution is shown in Map 3-1. Connecticut has lost population every year since 1991; the net level of out-migration has fallen each year since it peaked in 1992, however, and reached its five-year low in 1995; Nevertheless, there is still reason for concern, as more people continue to leave Connecticut than relocate to the state each year.<sup>1</sup>

### Age and Sex

Of the total population in 1995, 1,588,141 (48.5%) were males and 1,686,521 (51.5%) were females. In the age groups from <1 year through 20-24 years, the number of males exceeded that of females. In all subsequent 5-year age cohorts, however, females exceeded males. By ages 75-79, 80-84, and 85+ years, females outnumbered males by ratios of nearly 3:2, 2:1, and 3:1, respectively (Table 3-1). These ratios have been about the same since 1989.

**Table 3-1**  
**Estimated Population by Age and Sex**  
**Connecticut, 1995**

Age(Years)	Males	Females	Total
All Ages	1,588,141	1,686,521	3,274,662
<1 <sup>a</sup>	22,722	21,666	44,388
0-4	116,725	110,867	227,592
5-9	120,306	114,395	234,701
10-14	109,647	105,366	215,013
15-19	100,034	94,657	194,691
20-24	98,794	96,062	194,856
25-29	116,500	116,515	233,015
30-34	141,547	142,780	284,327
35-39	143,858	146,264	290,122
40-44	124,980	130,992	255,972
45-49	110,879	115,904	226,783
50-54	89,095	94,271	183,366
55-59	67,709	72,370	140,079
60-64	60,546	66,373	126,919
65-69	59,117	71,085	130,202
70-74	51,600	68,351	119,951
75-79	39,266	58,514	97,780
80-84	23,089	41,723	64,812
85+	14,449	40,032	54,481

<sup>a</sup> The <1 year age group represents 1995 Connecticut resident births of known sex.  
Source: DPH, OPPE

<sup>1</sup> State of Connecticut, Office of the State Comptroller. The Comptroller's Report: Connecticut's Economic Health, 1997.  
<http://www.state.ct.us/otc/97cmprpt/crptsum.htm>.

An important demographic trend in Connecticut and the U.S. is the overall “aging” of the population. This trend has many implications for public health. The greatest impact will occur after the “baby-boom” generation reaches age 65 years and older (beginning around 2010). However, large increases in the “very old” (age 85 years and older) will occur prior to 2010, and continue thereafter. According to projections for Connecticut,<sup>2</sup> the number of Connecticut residents 85 years of age or older will increase from 54,000 in 1995 to 65,000 in 2000 (20% increase), 77,000 in 2005 (43% increase), 88,000 in 2010 (63% increase), and 96,000 in 2020 (78% increase). While the total Connecticut population is projected to increase by only 9.3% from 1995 to 2020, the segment of the population aged 65 and older will increase by 34.8%.<sup>3</sup> The distribution by town of the 1995 population aged 65 and older is provided in Map 3-2. In 2020, 17.5% of the total Connecticut population will be aged 65 and older, 7.8% age 75 and older, and 2.7% age 85 and older.

## Race and Ethnicity

In 1990, the most recent year for which data are available by race and ethnicity, the Connecticut population of about 3.3 million included 2.8 million whites, 274,000 blacks, 204,000 Hispanics, 7,000 American Indians and 49,000 Asian-Pacific Islanders. The population was predominantly urban (2.6 million). While the total Connecticut population changed little after 1990, the composition of the population has changed in recent decades and is projected to continue to change. The proportions of minorities in the population have been increasing, especially Hispanics and Asians/Pacific Islanders.

## ECONOMIC AND SOCIAL INDICATORS

Sociodemographic indicators are crucial to understanding factors contributing to morbidity and mortality risks. Socioeconomic status (SES) is strongly related to health insurance coverage, which influences access to and quality of medical care. SES is also related to health behavior, the quality of the living environment, and health status.

Despite job growth in recent years, many areas of high unemployment still exist in the state, including the largest urban areas. For example, in November of 1996, unemployment in Hartford was just under 10%, or more than twice the state value.<sup>4</sup> Despite poor growth in median income and hourly wages, Connecticut still ranks first in the nation in per capita income, but also exceeds most other states in cost of living.<sup>5</sup>

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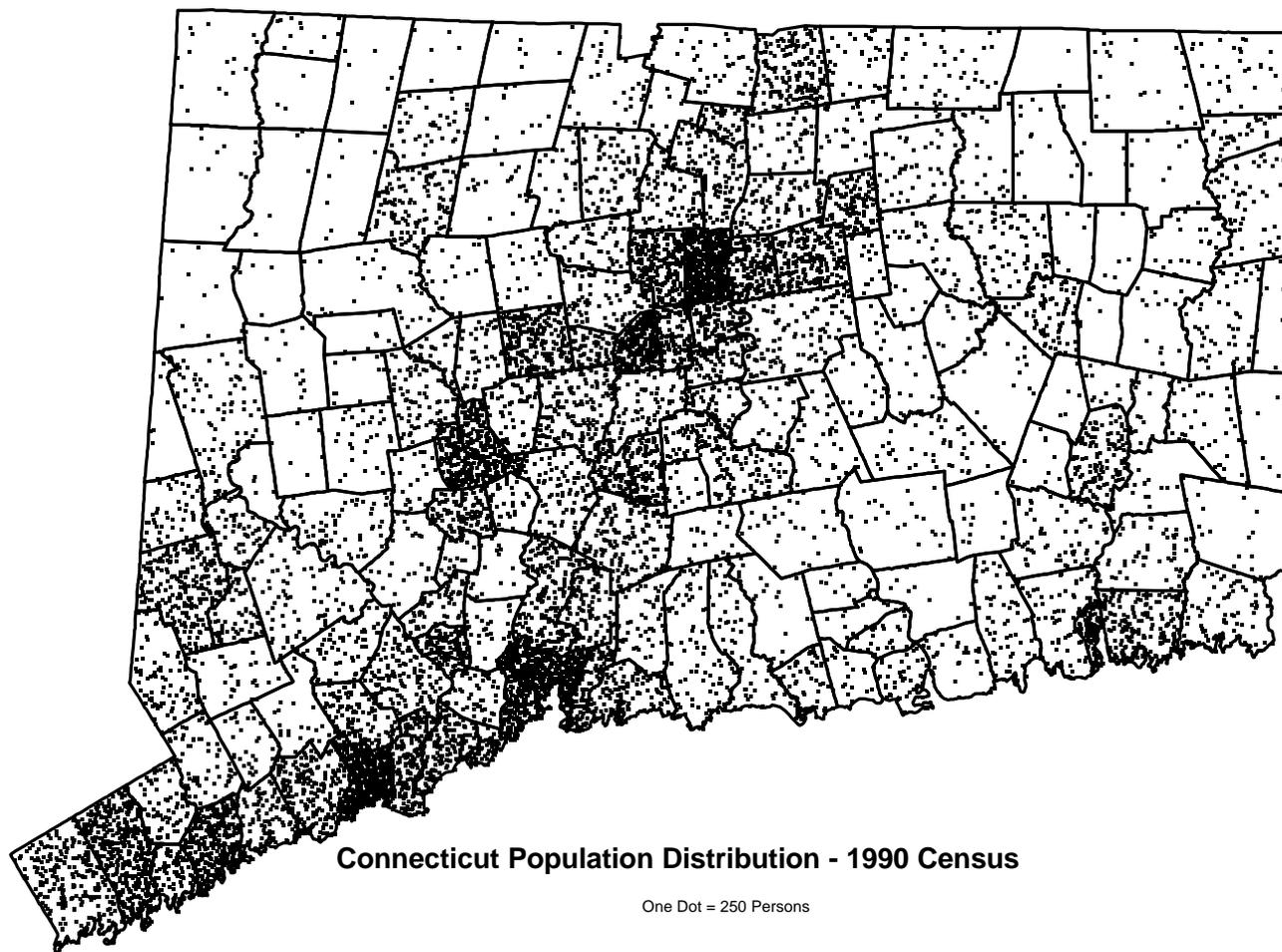
<sup>2</sup> Campbell PR. U. S. Department of Commerce, Economics and Statistics Administration, Bureau of the Census. *Current Population Reports - Population Projections for States, by Age, Sex, Race, and Hispanic Origin: 1993 to 2020*. Washington DC: Bureau of the Census. 1994 March.

<sup>3</sup> Campbell PR. *Current Population Reports - Population Projections for States, by Age, Sex, Race, and Hispanic Origin: 1993 to 2020*.

<sup>4</sup> Connecticut Department of Labor, Office of Research. *Connecticut Labor Force Data for Labor Market Areas & Towns*, November, 1996.

<sup>5</sup> State of Connecticut, Office of the Secretary of State, “State of Connecticut. Economic Condition and Outlook.” <http://www.state.ct.us/oc/97cmpprt/crptecon.htm>.

Map 3-1



**Connecticut Population Distribution - 1990 Census**

One Dot = 250 Persons

Note: Dots are randomly distributed within or at a town boundary.  
Source: U.S. Census Bureau, 1990

Educational level is widely used as an indicator of socioeconomic status and is associated with infant and adult mortality. Educational level is strongly associated with income, although disparities in income of blacks and whites persist within educational level. Striking racial-ethnic disparities in educational and income level are evident in Connecticut (Table 3 - 2), as in the entire U.S. Much of the black-white disparity in various health indicators can be explained by social class differences, but residual disparities often exist that may reflect other factors such as discrimination. Social epidemiology and medical sociology studies of different countries have shown that the degree of inequality in income distribution in a country is a predictor of mortality rates in infants and adults.<sup>6</sup> For many developed countries including the U.S., and for Connecticut, the inequality in income distribution has been increasing; that is, a decreasing proportion of the population holds a growing proportion of the country's wealth. This trend is due in part to the increase in the number of single-parent families and greater growth of salaries among college graduates than persons with little education.

**Table 3-2**  
**Sociodemographic Data**  
**Connecticut, 1990**

Indicator	Race/Ethnicity			
	White	Black	Hispanic <sup>a</sup>	All Races
<i>Education level of persons aged 25+:</i>				
High school graduate (%)	80.9%	67.0%	53.5%	79.2%
College graduate or higher (%)	28.5%	12.3%	12.1%	27.2%
Median household income (\$)	\$43,407	\$28,011	\$29,310	\$41,721
Persons with income below federal poverty level (%)	4.6%	19.8%	15.5%	6.8%
<i>Housing indicators:</i>				
More than 1 person per room (%)	1.3%	8.1%	15.0%	2.3%
Built in 1993 or earlier (%)	24.6%	27.4%	32.8%	25.5%

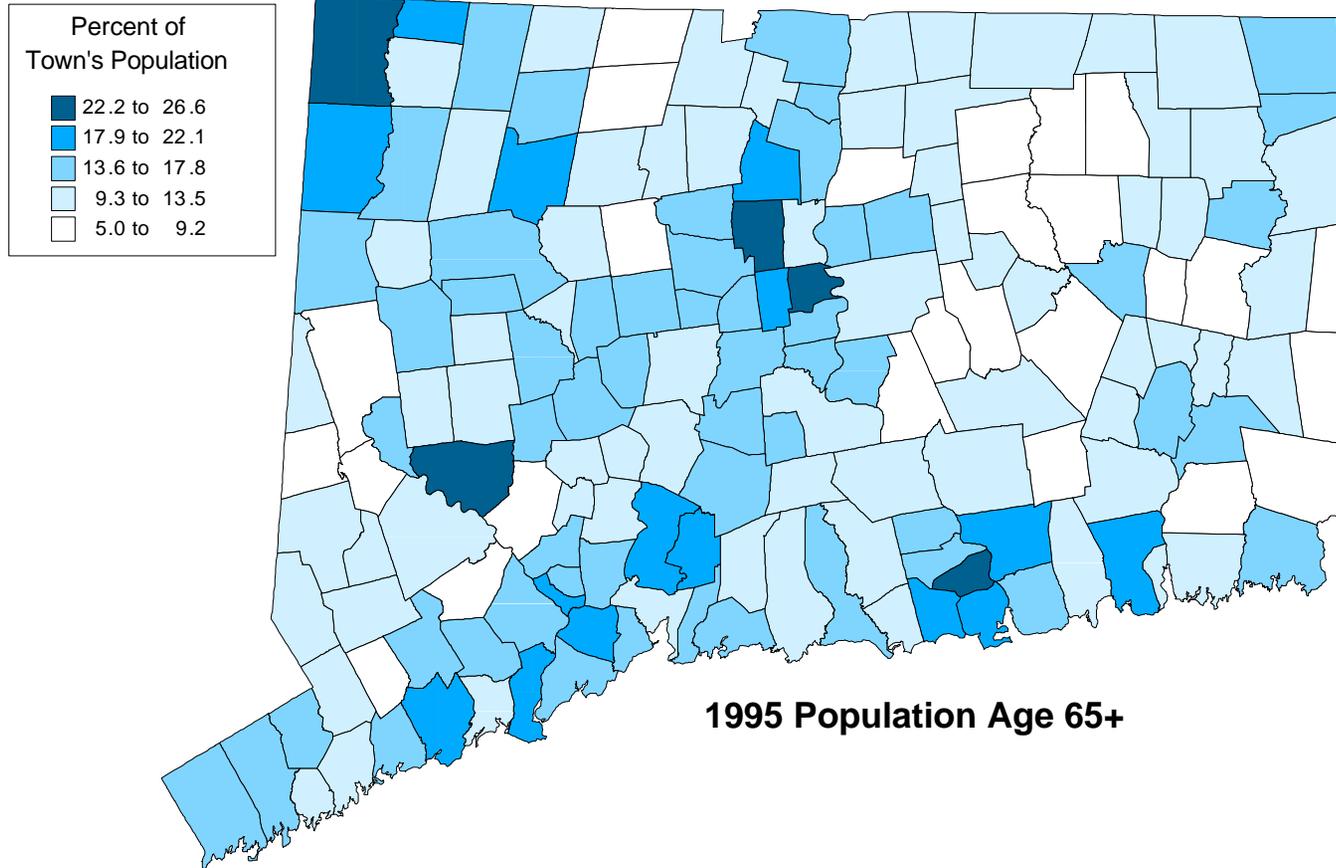
a The "Hispanic" category overlaps with the other two categories, because Hispanics can be of any "race" (white, black or other); some Hispanics consider their "race" to be Hispanic. Source: 1990 Census data.

The "poverty rate" or proportion of persons with income below the federal poverty level (Table 3-2) is especially useful, because this indicator takes into account the size of the household. The term "two Connecticut" is sometimes used in a broad sense to indicate the disparities in income and quality of life in Connecticut. Many strata could be defined by various sociodemographic criteria. Some examples are urban vs. rural, poor vs. non-poor persons (or residents of "affluent" vs. "non-affluent" towns), homeless vs. non-homeless persons, black vs. white persons and "mixed race" persons, Hispanic vs. non-Hispanic, American Indian vs. other, and Asian vs. non-Asian. All of these strata have significance for quality of life and health, though poorly documented and understood. Minorities and poor persons (especially women with young children) are disproportionately represented among the homeless. Medical risk factors also increase the risk of homelessness. There is growing interest in the social, medical and public health challenges presented by homeless persons.<sup>7</sup>

<sup>6</sup> Najman, J.M. Health and poverty. *Soc. Sci. Med.* 1993; 36: 157-166.

<sup>7</sup> Plumb J.D. Homelessness: Care, prevention, and public policy. *Annals of Internal Medicine* 1997;126:973-975.

Map 3-2



Note: Population represents data interpolated to 4/95  
Source: OPM Population Projections, 9/95

For historical reasons, the black-white distinction is especially important. Minorities with extremely high poverty rates are concentrated in many inner cities. This is also true for Connecticut, despite the smaller population size of the largest cities relative to many other urban areas (e.g., New York City). In 1990, the poverty rate for persons in the “central places” of urban areas (i.e., inner cities) of Connecticut was 13.1%, compared with the statewide figure of 6.8%.<sup>8</sup>

Among Connecticut’s eight counties, the lowest levels of education and income are for Windham County, for each racial-ethnic group. However, counties cover large geographic areas and are not useful for most public health studies or projects. For example, Fairfield County includes many affluent areas; whereas, Bridgeport has a high poverty rate. The 169 towns of Connecticut vary widely in income measures from the 1990 Census, with residents of Weston (in Fairfield County) having a median household income almost five times higher than that for residents of Hartford (Map 3-3).

The quality of housing is another aspect of the social-physical environment relevant to quality of life and health. In Connecticut, indicators of substandard housing are more common in minorities than in whites, reflecting differences in social class and other factors. (Table 3-2).

The “age” of housing is only a crude indicator of the “quality” of housing. It reflects, in part, population movement from urban to suburban or rural areas with the building of new homes. Old housing exists in relatively affluent areas, including “historic” areas outside of urban areas. Nevertheless, age of housing is directly related to risk of childhood exposure to lead paint, with major implications for health and mental development. Housing built before 1950 is a significant predictor of the rate of childhood lead poisoning in a community, independent of other predictors such as income.<sup>9</sup> In 1990, more minorities than whites lived in older housing (Table 3-2). The proportion of older housing for black householders in Middlesex and Tolland Counties was low, but small numbers of blacks live in these counties. The relatively high occurrence of substandard housing in inner city areas, with predominantly minority populations, is well documented.

More than one person per room is the most commonly used crude criterion for crowding. Degree of crowding is related to the risk of both infectious and chronic diseases (including certain cancers) in complex ways that are poorly understood. In 1990, 2.3% of Connecticut housing units had two or more persons per room. Compared to whites, crowding was more than six times higher among blacks and 11.5 times greater among Hispanics (Table 3-2), and crowding was also higher than the state percent in the large urban centers (Bridgeport, 6.7%; Hartford, 9.2%; New Haven, 5.0%)<sup>10</sup>.

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<sup>8</sup> U. S. Department of Commerce, Economics and Statistics Administration, Bureau of the Census. *1990 Census of Population - Social and Economic Characteristics Connecticut*. Washington DC: Bureau of the Census. 1993 September:81.

<sup>9</sup> Sargent J.D. et al. Childhood lead poisoning in Massachusetts communities: Its association with sociodemographic and housing characteristics. *American Journal of Public Health* 1995;85:528-534.

<sup>10</sup> U.S. Bureau of the Census. *Connecticut Housing Characteristics - 1990 Census Complete Count Data - Part*, 1991.



## CONSENSUS HEALTH INDICATORS

In response to Objective 22.1 of *Healthy People 2000*,<sup>11</sup> a consensus set of 18 health indicators<sup>12</sup> was developed in 1991 by a committee of policy and technical experts representing the various levels of public health organizations in the U.S. The indicators were created to help communities assess their general health status. They were intended to ensure comparability of data and to encourage use by various levels of public health agencies, without superseding any of the *Healthy People 2000* indicators. The consensus set of indicators has the practical advantage of employing measures for which data are available at the state and local levels throughout the United States.

Comparisons of the 18 consensus indicators for Connecticut and the U.S. for 1992,<sup>13</sup> the latest year for which such comparisons are available, and Connecticut figures for 1995, are in Table 3-3.

**Table 3-3**  
**Consensus Set of Health Status Indicators**  
**United States (1992) and Connecticut (1992 and 1995)**

No.	Indicator (ICD-9 Code number)	1992		1995	
		US	CT	Rank <sup>a</sup>	CT
Indicators of health status outcome					
1	Race/ethnicity-specific infant mortality as measured by the rate, (per 1,000 live births) of deaths among infants <1 year of age				
	All races	8.5	7.6	34	7.2
	White	6.9	6.2	42	6.7
	Black	16.8	17.2	16	13.6
	Hispanics <sup>b,c</sup>	7.6	7.9	18	10.8
<i>Death rates (per 100,000 population) for:</i>					
2	Motor vehicle crashes <sup>d</sup> (E810-E825)	15.8	10.0	47	10.8
3	Work-related injury <sup>e,f</sup>	3.2	1.2	47	2.1
4	Suicide <sup>d</sup> (E950-E959)	11.1	8.3	46	9.2
5	Lung cancer <sup>d</sup> (162)	39.3	34.9	39	33.1
6	Female breast cancer <sup>d</sup> (174)	21.9	21.0	32	21.4
7	Cardiovascular disease <sup>d</sup> (390-448)	180.4	160.8	37	152
	Heart disease <sup>d</sup> (390-398, 402, 404-429)	144.3	131.9	30	123.4
	Stroke <sup>d</sup> (430-438)	26.2	20.8	49	20.7
8	Homicide <sup>d</sup> (E960-E978)	10.5	6.1	31	5.4
9	All causes <sup>d</sup> (0-E999)	504.5	447.3	42	444.5
<i>Reported incidence (per 100,000 population) of:</i>					
10	Acquired immunodeficiency syndrome <sup>e,g</sup>	31.2	43.3	6	32.9

(Table 3-3 continues)

<sup>11</sup> U.S. Department of Health and Human Services, Public Health Service. *Healthy People 2000: National Health Promotion and Disease Prevention Objectives*. Washington, DC: DHHS publication number (PHS) 91-50212. 1990.

<sup>12</sup> U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control. Consensus set of health status indicators for the general assessment of community health status - United States. *Morbidity and Mortality Weekly Report*. 1991 July 12;40(27):449.

<sup>13</sup> U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control, National Center for Health Statistics, Division of Health Promotion Statistics. *Health Status Statistics: Each State, 1992* is available in Lotus worksheet format (hsi-st92.wk1) via the Internet site: <http://www.cdc.gov/nchswww/datawh/ftpserver/hstatus/hstatus.html>.

Table 3 - 3 (Continued)

No.	Indicator (ICD-9 Code number)	1992		1995	
		US	CT	Rank <sup>a</sup>	CT
Indicators of health status outcome					
<i>Reported incidence (per 100,000 population) of: (continued)</i>					
11	Measles <sup>e</sup>				
	Rate	0.1	0.3	5	0.1
	No. cases	237	9	7	2
12	Tuberculosis <sup>e</sup>	9.8	4.7	32	4.2
13	Primary and secondary syphilis <sup>e</sup>	10.4	4.8	26	2.6
Indicators of risk factors					
14	Incidence of low birthweight, as measured by the percentage of total number of live born-infants weighing <2,500 grams at birth	7.1	6.9	28	7.1
15	Births to adolescents (females aged 10-17 years) as a percentage of total live births	4.9	3.3	43	8.6
16	Prenatal care, as measured by percentage of mothers delivering live infants who did not receive prenatal care during the first trimester of pregnancy	22.3	12.5	50	12.3
17	Childhood poverty, as measured by the proportion of children <15 years of age living in families at or below the poverty level (Standard error)	20.8 (0.20)	14.9 (1.75)	32	--
18	Proportion of persons living in counties exceeding U.S. Environmental Protection Agency standards for air quality during the previous year <sup>i</sup>	23.5	96.9	1	100%

a Rank among the 50 states. Worst = 1.

b U.S. figures are based on the 1989-91 linked birth and infant death data. Connecticut 1992 figures are based on linked birth files from 1992. Connecticut 1995 figure is based on linked birth files from 1994.

c Hispanic ethnicity can be of any race.

d Age adjusted to the 1940 U.S. standard million population.

e CDC used U.S. 1993 data for these indicators in their 1992 report.

f Data are for people 16 years of age and older.

g By date of diagnosis. Adjusted for delays in reporting; not adjusted for underreporting.

h Related children in families.

i 1993 data based on 1990 census county populations.

Sources: U.S. figures: U.S. Centers for Disease Control and Prevention; CT 1992 and 1995 figures for Nos. 1-17: DPH, OPPE; CT 1992 and 1995 figures for No. 18: CT Department of Environmental Protection

Based on the consensus set of indicators, the overall health status in Connecticut is comparatively good. Connecticut ranked among the worst ten states for only three of 18 indicators: measles incidence (fifth worst in the nation); AIDS incidence (sixth worst); and sub-standard air quality (worst). In contrast, the state ranked among the ten best (ranks 41-50) for eight indicators: infant mortality (white), total death rate, motor vehicle crash death rate, work-related injury death rate, suicide rate, stroke death rate, births to adolescents, and prenatal care. These, and the remaining consensus indicators, are discussed in greater detail later in Chapter 3.

For the indicator "total deaths per 100,000 population," Connecticut ranked forty-second in the nation. There was, however, substantial variation by town. Mortality rates by town for "all causes" combined in 1989-91, the most recent years for which town-level, age-adjusted mortality rates (AAMR) are available, are shown in Map 3-4. Fourteen of the state's 169 towns had significantly elevated mortality rates ( $p < .05$ ) when compared to the state rate. Towns with elevated rates were found in both urban and rural areas of the state. For example, the five towns with the worst AAMRs were, starting with the highest rate, Voluntown, Hartford, New Haven, Bridgeport, and Hebron.

# MORTALITY

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## OVERVIEW

Eight of the 18 consensus indicators discussed above are mortality-based measures. Although death is the most severe outcome of disease or injury, it represents only a fraction of the disease burden for Connecticut. Nevertheless, focusing on mortality data helps to identify opportunities for interventions to improve the health of Connecticut's residents, particularly when deaths are premature or preventable. To maximize the utility of the mortality information we have considered a variety of summary statistics, ranging from simple counts to rates adjusted for age and weighted for premature deaths of younger persons. We have also considered new ways of grouping causes of deaths (e.g., "firearms deaths," which draws from "suicides" and "homicides") to allow the data to be viewed from a public health perspective focused on prevention opportunities aimed at maximizing the health of a community.

## LEADING CAUSES OF DEATH

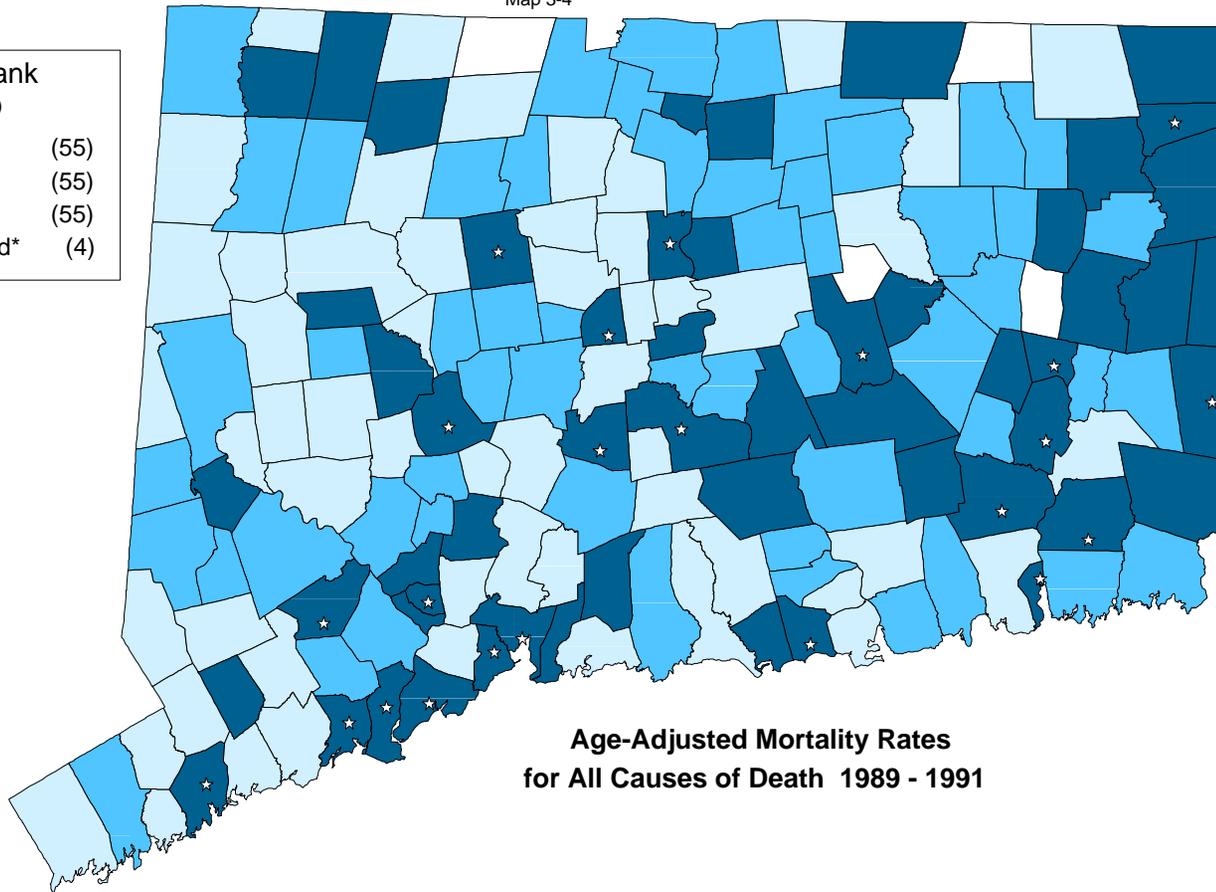
Leading causes of death vary by the age and sex of the decedent. The top five causes of death by age are shown in Table 3-4. Standard "leading cause of death" rankings, (such as those shown in Table 3-4), are based on the simple number of deaths. Eleven clusters of top-ranked causes which span adjacent age strata are highlighted. Note that the ranks reflect vastly different numbers of deaths, in each age stratum. Ranks based on counts, crude rates and age-adjusted rates will make use of death for persons of all ages.

Another mortality measure, "years of potential life lost to age 65," is weighted to reflect premature mortality, and is emphasized here because it focuses attention on diseases and injuries that occur early in life. Table 3-4 also divides deaths according to those under age 65, and those 65 and over. Rates based on years of potential life lost (YPLL) only include deaths in the "under 65" section of the display. The YPLL figures will only be based on partial death counts for some clusters that span the age 65 threshold, such as cancer and diseases of the heart, but most of the unintentional injury deaths will be included. The degree to which a death is "premature" is defined as the years between the decedent's age at death and age 65. The YPLL statistic provides a simple measure of time lost due to premature death. The loss of time is correlated with both human and economic losses to society. YPLL rates are age-adjusted to allow valid comparisons across communities with different age distributions.

The same causes of death shown in Table 3-4 were also ranked by the YPLL rate to age 65. Using these YPLLs, the rankings of unintentional injuries, suicide, homicide and HIV infection increased substantially, compared to rankings based on numbers of deaths, alone. Conversely, diseases of the heart, cerebrovascular disease, and pneumonia and influenza received lower ranks by YPLLs than by numbers of deaths (Figure 3-1). Mortality data from 1989-1991 has been used so that town and state-level figures would use the same base years. The rankings reflected in Figure 3-1 changed only slightly by 1995. There was no change in the causes of death ranked among the top five. Based on YPLL rankings, there was one change. By 1995 homicide had been replaced by HIV-infection as one of the top five causes of premature mortality.

Map 3-4

Town Rank	
(# of towns)	
Top third	(55)
Middle third	(55)
Bottom third	(55)
Not calculated*	(4)

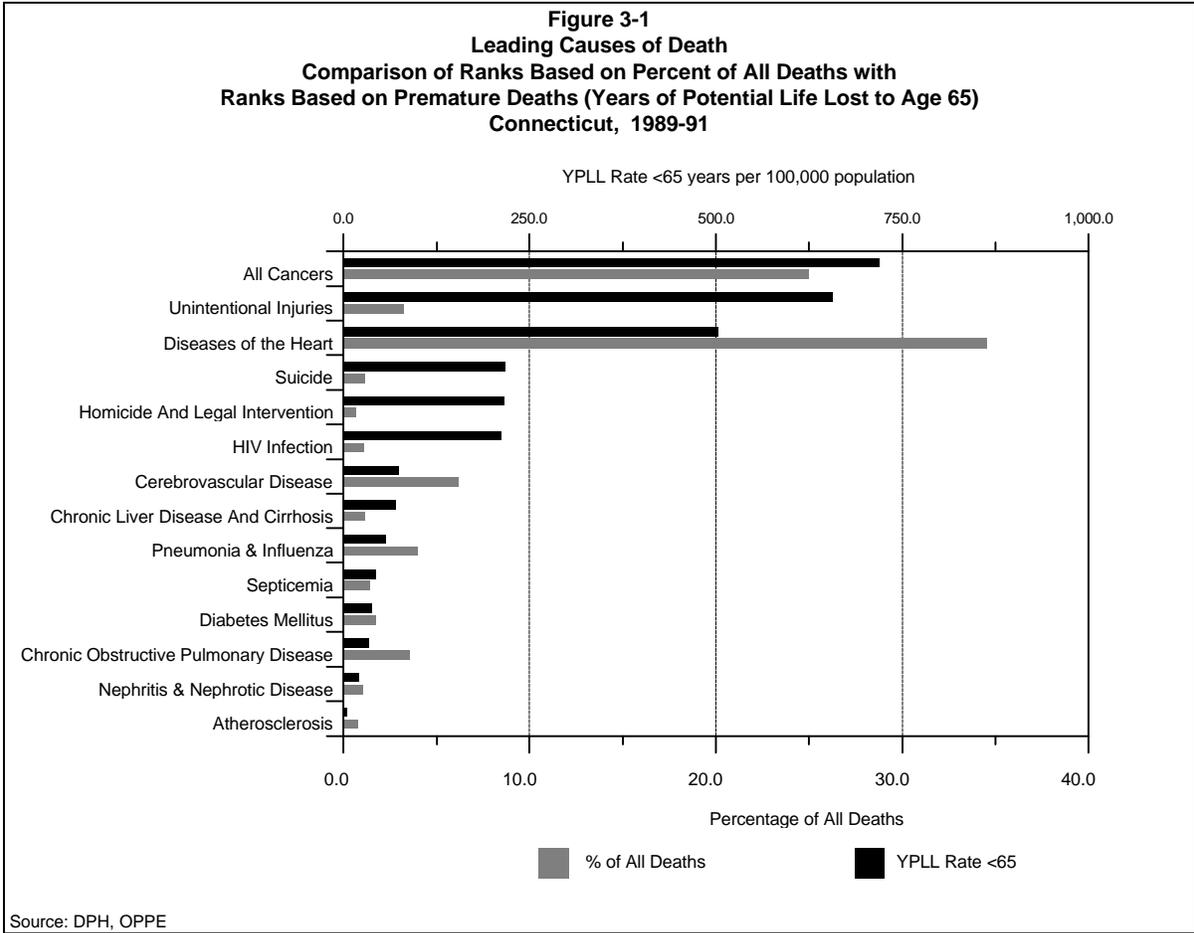


☆ The town age-adjusted mortality rate is significantly higher than the state rate of 631.1 ( $p < 0.05$ ), using the 1970 Standard Million Reference Population.  
\* Rates are not calculated for less than 25 events.  
Note: Rates are expressed as deaths per 100,000, adjusted to the U.S. 1970 Standard Million Population.  
Source: DPH, OPPE, 1998

**Table 3-4  
Top Five <sup>a</sup> Leading Causes of Deaths  
by Age for Both Sexes Combined  
Connecticut, 1995**

Cause of Death	Age in Years													
	Premature Deaths											65-74 (n=5,742)	75-84 (n=8,797)	85+ (n=8,065)
	<1 (n=322)	1-4 (n=53)	5-9 (n=25)	10-14 (n=47)	15-19 (n=125)	20-24 (n=170)	25-34 (n=653)	35-44 (n=1,188)	45-54 (n=1,628)	55-64 (n=2,622)				
Congenital Anomalies	1	2	2		5	-	-	-	-	-	-	-	-	
Short Gestation, Low Birthweight	2	-	-	-	-	-	-	-	-	-	-	-	-	
SIDS	3	-	-	-	-	-	-	-	-	-	-	-	-	
Maternal Complications of Pregnancy	4	-	-	-	-	-	-	-	-	-	-	-	-	
Complications of Placenta	4	-	-	-	-	-	-	-	-	-	-	-	-	
Unintentional Injuries	-	1	1	1	1	1	1	3	4	-	-	-	-	
Homicide	-	2	5		2	2	5	-	-	-	-	-	-	
Cancer	-	4	2	3	4	4	4	2	1	1	1	2	2	
Septicemia	-	5	-	-	-	-	-	-	-	-	-	-	-	
HIV	-	5	5	4	-	-	2	1	3	-	-	-	-	
Diseases of the Heart	-	5	4	5	-	5	-	4	2	2	2	1	1	
Cerebrovascular Disease	-	-	5	-	-	-	-	-	-	4	3	3	3	
Suicide	-	-	-	2	3	3	3	5	-	-	-	-	-	
Other Infections	-	-	5	5	-	-	-	-	-	-	-	-	-	
Chronic Liver Disease	-	-	-	-	-	-	-	-	5	-	-	-	-	
COPD	-	-	-	-	-	-	-	-	-	3	4	4	5	
Diabetes	-	-	-	-	-	-	5	-	-	5	5	-	-	
Pneumonia and Influenza	-	-	-	-	-	-	-	-	-	-	-	5	4	

<sup>a</sup> Ranked by number of deaths.  
Source: DPH, OPPE



## EXPANDED CAUSE OF DEATH CATEGORIES

The “cause of death” recorded on a death certificate typically indicates the primary disease condition or injury noted at the time of death (e.g., liver disease or drowning). Such conditions usually result, however, from one or more external contributing factors. These factors have been termed, *actual causes of death*, and the major “actual” causes have been identified: tobacco, diet and activity patterns, alcohol, microbial agents, toxic agents, firearms, sexual behavior, motor vehicles, and illicit use of drugs.<sup>14</sup>

YPLL rates were calculated for three of these “actual” causes of death (tobacco, alcohol, and firearms), for diabetes (including all “diabetes-related” deaths), and for infant mortality, an age-specific classification that is a key aggregate indicator for a single program area (maternal and child health). A comparison of ranks for these expanded cause of death categories was made by contrasting the percentage of all deaths and the YPLL rates with those displayed for the leading causes of death in Figure 3-1. Two of these expanded classifications had ranks based on counts and YPLLs that were equal, “tobacco-related deaths” ranked 3rd, and “diabetes-related deaths” ranked 7th. The count-based ranks were higher (i.e. counts were lower) than the YPLL-based ranks for : “infant mortality” (15,1), “alcohol-attributable

<sup>14</sup> McGinnis, JM, Foege, WH. Actual causes of death in the United States. *Journal of the American Medical Association* 1993;2207-2212.

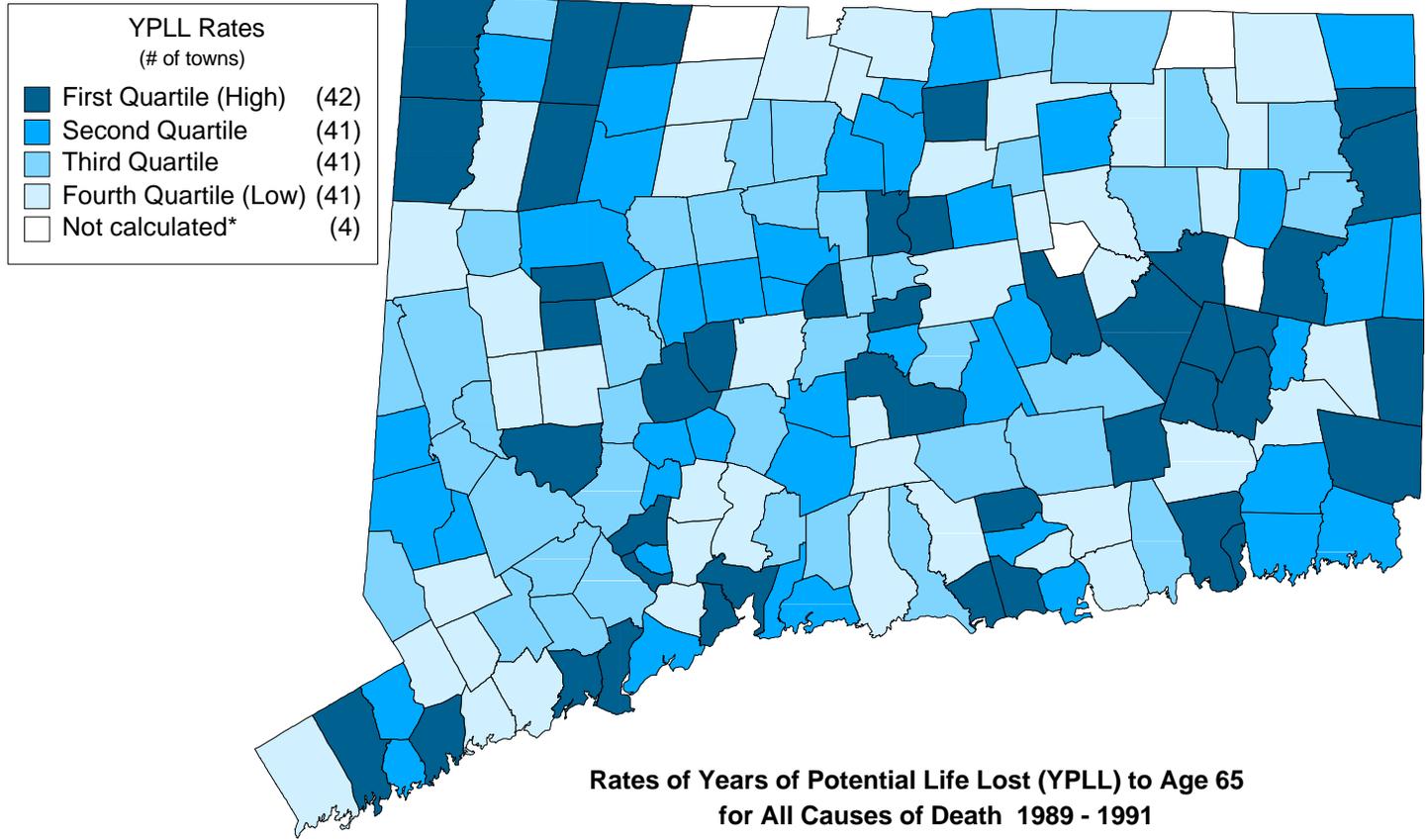
deaths”(8,4) , and “firearm-related deaths”(4,8). The use of a YPLL standard most dramatically affected the ranking of infant mortality. While infant deaths numbered only 398 in 1990 (or less than 2% of all deaths), the YPLL rate was greater than for any other causes.

A comprehensive ranking of causes of death by YPLL rates, including the expanded causes discussed above, is shown in Figure 3-2. YPLL-based rankings provide a valuable perspective from which to examine mortality data, but it is certainly not the only reasonable one. It does not reflect the impairment and/or disability associated with some non-fatal conditions, nor the availability of cost-effective interventions. However, despite the limitations of this measure, YPLL rates are clearly consistent with an orientation toward disease prevention. The benefit of prevention efforts which succeed in averting disease will be roughly proportional to the years of life saved as a result. Therefore, the greatest potential benefit may lie in addressing areas where YPLL rates are highest. To the extent that these YPLL statistics suggest practical targets for intervention, they may be more useful for public health programs and more intuitive to the general public than other measures of mortality.

Depending on town of residence, there was substantial variation in mortality from “all causes” of death, in terms of both AAMRs (Map 3-4) and YPLLs (Map 3-5) in 1989-91. The highest rates of premature mortality were in Bridgeport, Hartford, New Haven, and New London. The YPLL rate for Westbrook was also high, but the number of deaths was too small to be considered a stable rate estimate.

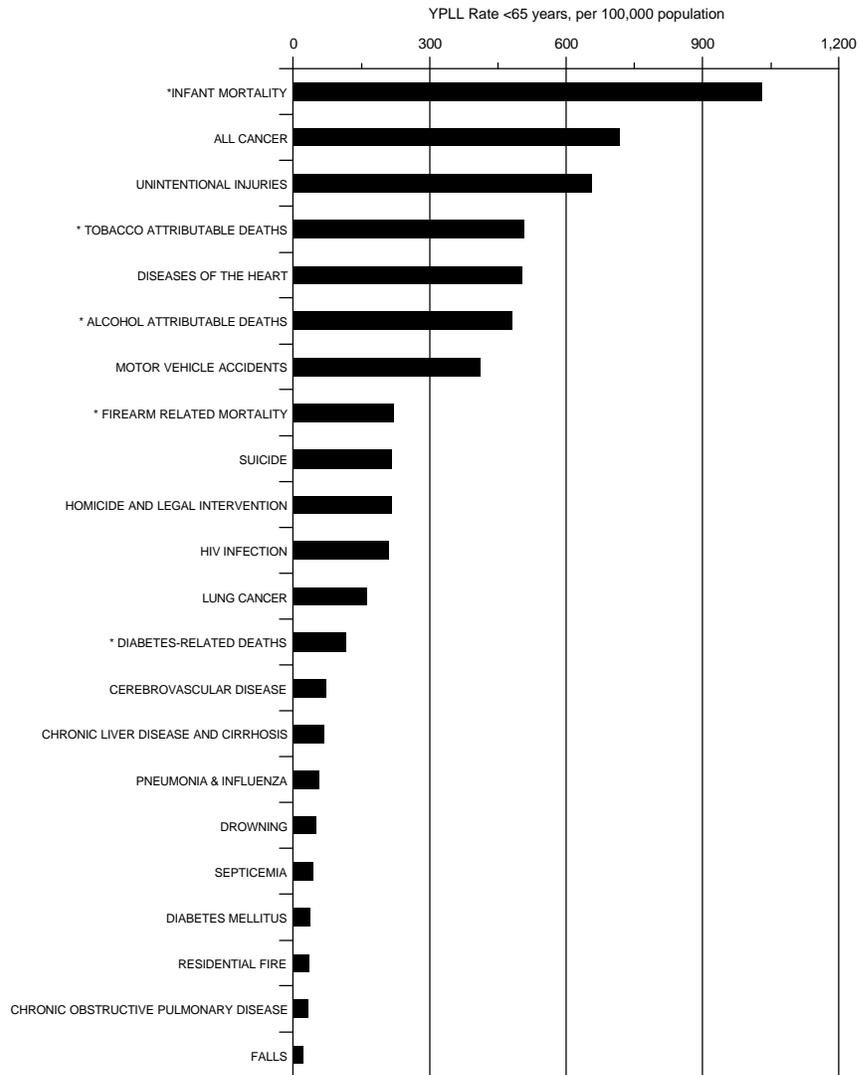
Leading causes of death can be viewed from different perspectives, including percentage of total deaths, age-adjusted mortality rates, and premature deaths (as years of potential life lost to age 65), each of which has both advantages and limitations. For the purposes of public health planning and priority setting, it will be particularly important to consider mortality from all three perspectives.

Map 3-5



\* Rates are not calculated for less than 20 events.  
Note: Rates are expressed as deaths per 100,000, adjusted to the U.S. 1970 Standard Million Population.  
Source: DPH, OPPE, 1997

**Figure 3-2**  
**Leading Causes of Death with Component Subgroups and Expanded Categories\***  
**Years of Potential Life Lost to Age 65 (YPLL)**  
**Connecticut, 1989-91**



\* Includes "expanded" death categories as noted in the text.  
 Note: Rates were age-adjusted to the 1970 U.S. standard million population.  
 Source: DPH, OPPE

# MATERNAL AND INFANT HEALTH

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## HIGHLIGHTS

- From 1986 to 1995, Connecticut's infant death rate fell from 9.0 to 7.3 deaths per 1,000 births, almost reaching the year 2000 objective of 7.0.
- From 1986 to 1995, the neonatal death rate dropped from 6.8 per 1,000 live births to 5.4 per 1,000 live births.
- Black infant mortality continues to be much worse than both the state's and whites' rates, by a ratio of more than 2:1.
- During the last ten years, the birth rate for teenage mothers was at its lowest in 1986 (31.1 per 1,000 live births) and at its highest in 1994 (41.4).
- In 1995 only about 12.3% of Connecticut women did not initiate prenatal care during the first trimester (about half the U.S. rate).
- Connecticut's low birthweight percentages have remained constant. Whites had consistently lower rates than Hispanics and blacks.

## INTRODUCTION

Six key maternal and infant health (MIH) indicators were evaluated, including indicators of poor pregnancy outcomes (infant mortality, low birthweight deliveries, and very low birthweight deliveries) and indicators of risk for poor outcomes (lack of adequate prenatal care, late or no prenatal care, and births to teenage mothers). Based on these indicators the overall condition of maternal and infant health is relatively good in Connecticut, with the exception of some notable areas that need improvement. Infant mortality rates were low (7.3/1,000 in 1995) compared to other states or to the year 2000 target objective (7.0/1,000). U.S. rates have been consistently higher than those of other developed countries, however, suggesting that Connecticut, along with other states, could do better.

In 1995 only 12.3% of Connecticut women did not receive early prenatal care in accordance with the recommended guidelines of the American College of Obstetricians and Gynecologists<sup>15</sup>(about half the U.S. rate). The CDC ranked Connecticut as one of the two best states on this indicator in 1992. In contrast, the percentage of low birthweight deliveries, which is an important birth outcome and a predictor of infant mortality, has not improved for ten years and remains a major challenge for maternal and child health programs in Connecticut.

Significant health status disparities exist within Connecticut. Towns with statistically significant elevations for any of the indicators discussed in this section are noted in Table 3-5; regional and town-level differences in indicator values often differed by factors of 2 to 3. Disparities by race and ethnicity were also considerable; minorities with higher rates of poverty tend to have poorer health status on a variety of MIH outcomes. Town level presentations for each of the indicators displayed in Table 3-5 are provided in Maps 3-6 to 3-10. Rates or percents were calculated in towns with at least 5 events reported. Towns with rates or percents that are significantly higher than the state figure are identified with a star.

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<sup>15</sup> American College of Obstetricians and Gynecologists. *Standards for Obstetric-gynecologic Services*, 7th Edition. Washington, D.C.: Author. 1989.

**Table 3-5  
Towns with Significant ( $p < 0.05$ ) Elevations in One or More MIH Indicators<sup>a</sup>  
Connecticut 1994-95**

Town	Number of Births	Infant Mortality Rate <sup>b</sup>	Percent Low-birthweight <sup>c</sup> Deliveries	Percent Late/ No Prenatal Care <sup>d</sup>	Percent Non-Adequate <sup>e</sup> Prenatal Care	% Repeated Births to Teens <sup>f</sup>
Connecticut	90,183	7.6	7.0	11.9	16.1	20.8
Number of Events		(686)	(6,269)	(9,996)	(12,875)	(1,441)
Ansonia	531			16.3		
Bloomfield	415		11.3			
Bridgeport	4,655	11.1	9.2	17.4	26.1	26.4
East Hartford	1,392		9.3			
Enfield	1,122	15.2				
Groton	1,573			16.2	19.4	
Hartford	4,877	17.6	13.0	17.5	23.5	28.9
Meriden	1,842		(H) 8.1	19.0	30.5	
Middletown	1,269			15.5	23.3	
Naugatuck	816			15.8		
New Britain	2,066		(H) 8.2	17.3	27.3	
New Haven	3,841	13.3	10.4	22.3	29.5	
New London	864			24.9	30.0	
Norwalk	2,610			18.9	21.0	
Norwich	1,113			20.1	21.7	
Stamford	3,666		(BNH) 11.1	18.6	21.9	
Vernon	799				21.2	
Waterbury	3,659		9.8	31.3	34.4	28.0
Windsor	713		(BNH) 13.6			

<sup>a</sup> Figures are for all races, unless otherwise specified (BNH = Black-non-Hispanic; H=Hispanic). Composite two-year aggregated data were used to provide a more reliable assessment of differences among small- and medium-sized towns. The reported elevations are based on comparisons between race/ethnicity-specific town figures and a state figure for all races. This strategy was adopted to flag the elevated rates for minorities that would be missed in a formal, stratified analysis of the data.

<sup>b</sup> Infant mortality = deaths of children less than 1 year of age, per 1,000 live births.

<sup>c</sup> Low birthweight = births of infants weighing less than 2,500 grams.

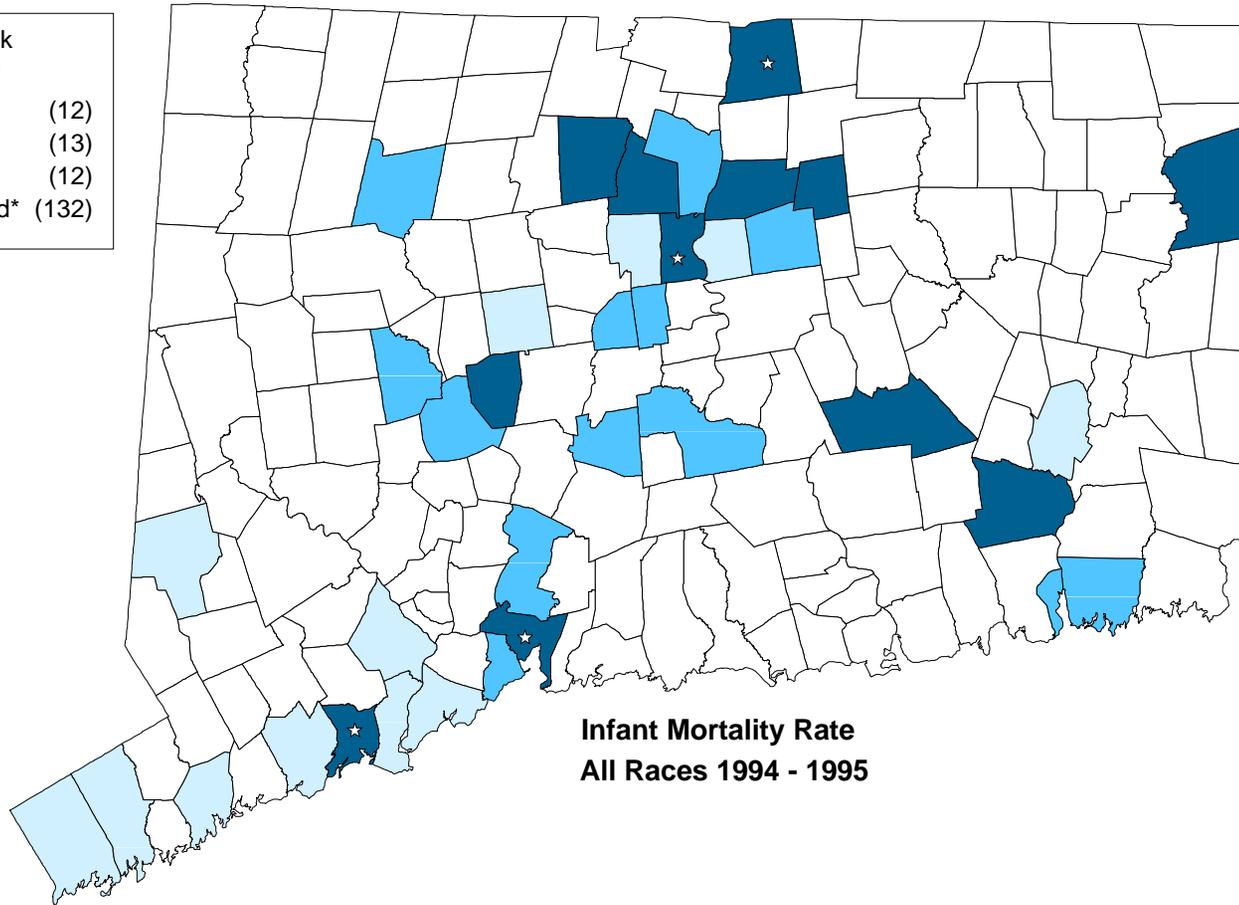
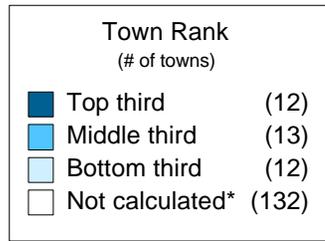
<sup>d</sup> Late or no prenatal care = Mothers began prenatal care after the first trimester of pregnancy or received no care.

<sup>e</sup> Non-adequate prenatal care = Mothers received 'inadequate' and 'intermediate' levels of care as defined by a modified Kessner Index .

<sup>f</sup> Percent of repeated births to teenage mothers = Second or later-order child to mothers 15-19 years of age, per 100 birth to women 15-19.

Source: DPH, OPPE

Map 3-6

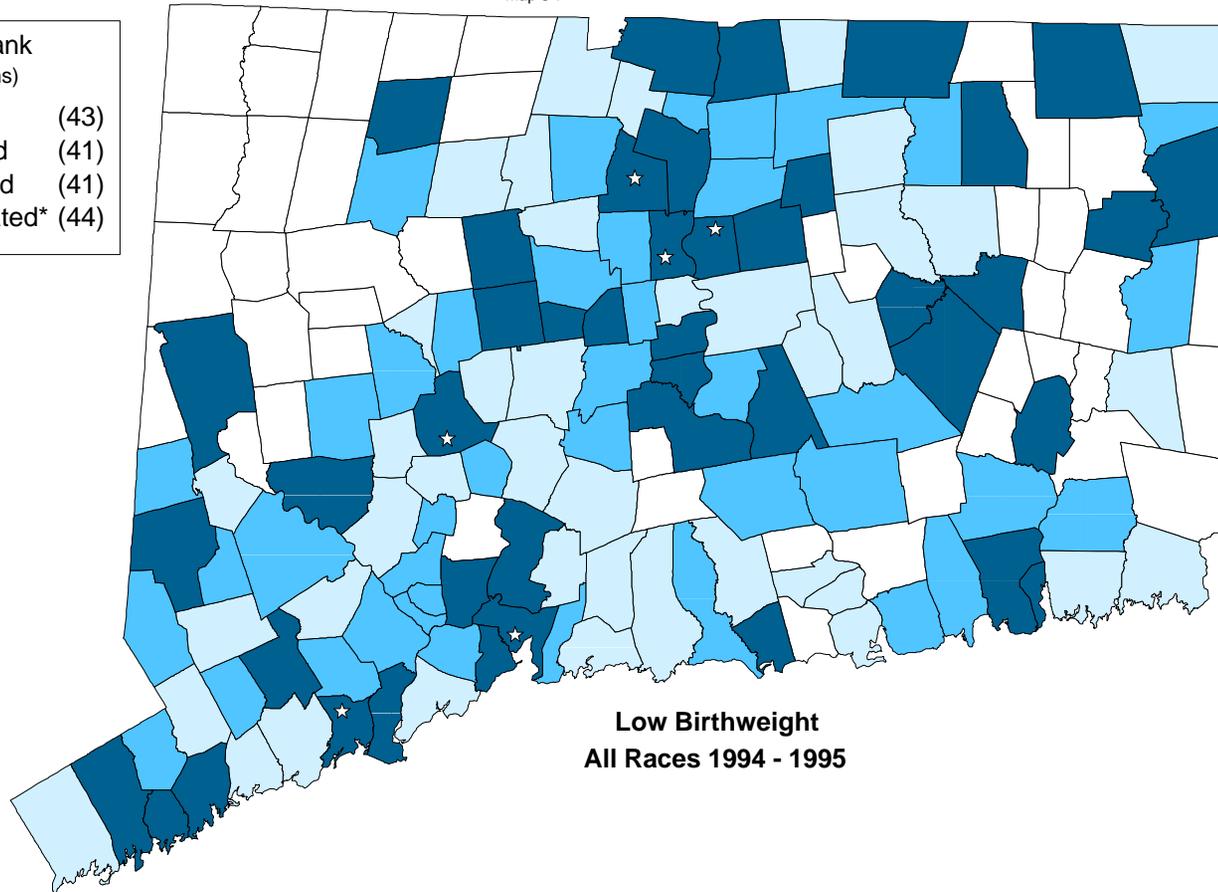
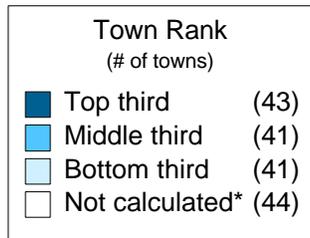


☆ The town infant mortality rate is significantly higher than state rate of 7.6/1,000 births ( $p < 0.0125$ ).

\* Rates are not calculated for less than 5 events.

Source: DPH, OPPE, 1997

Map 3-7



**Low Birthweight  
All Races 1994 - 1995**

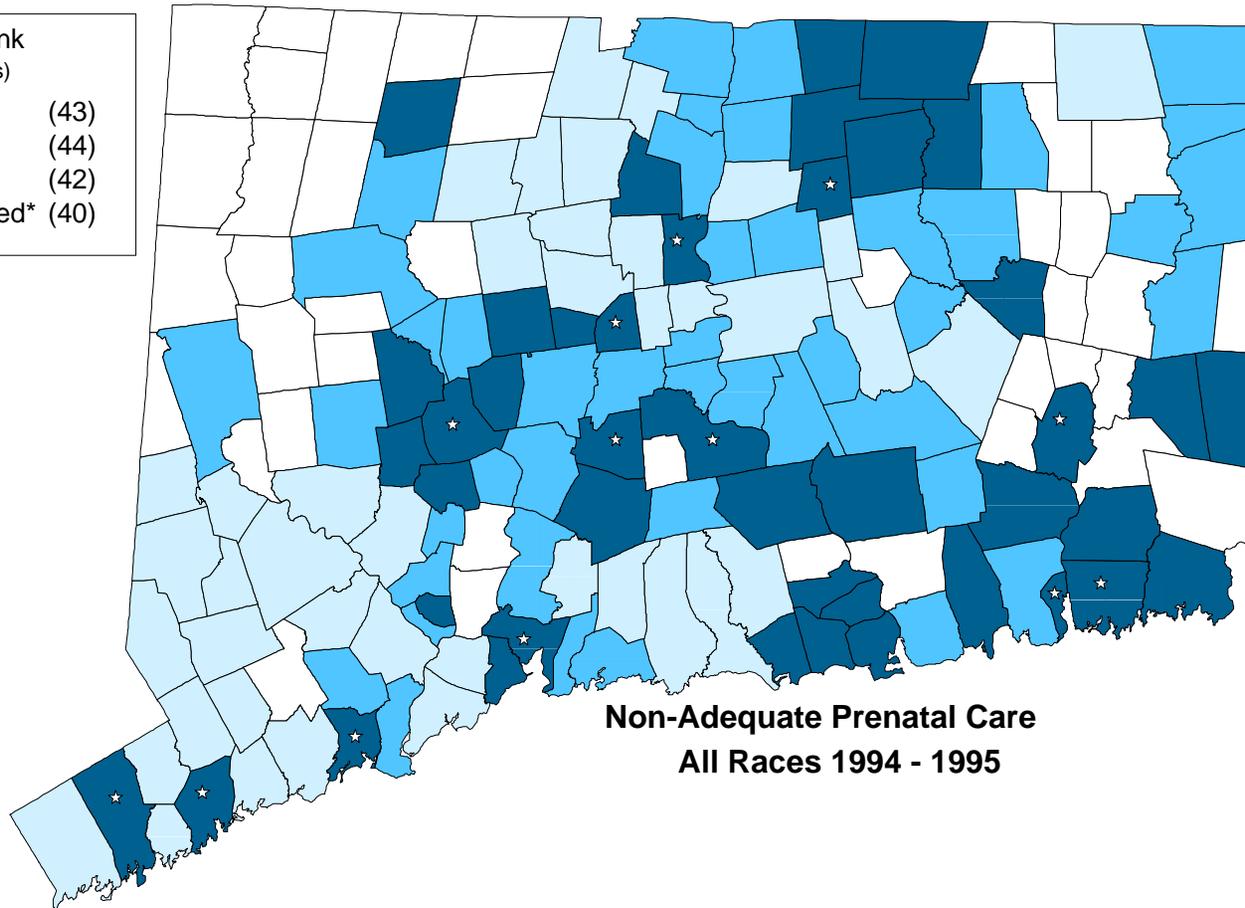
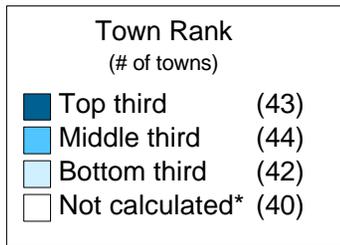
☆ The town low birthweight percentage is significantly higher than the state percentage of 7.0 ( $p < 0.01$ ).

\* Percentages are not calculated when the number of events is less than 5.

Source: DPH, OPPE, 1997



Map 3-9

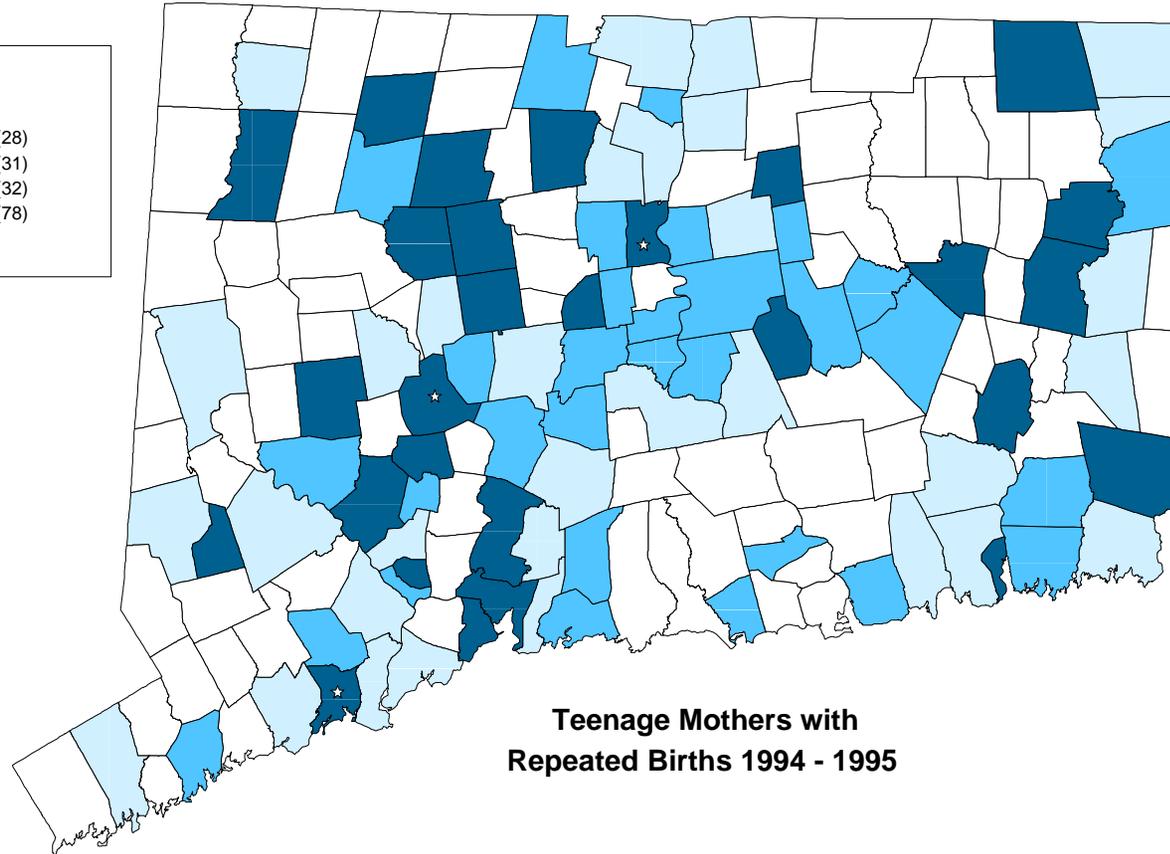
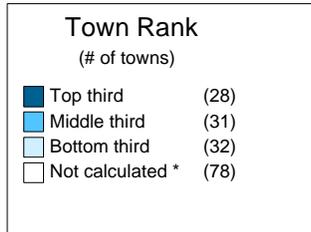


☆ The town non-adequate prenatal care percentage is significantly higher than the state percentage of 16.1 ( $p < 0.01$ ).

\* Percentages are not calculated when the number of events is less than 5.

Source: DPH, OPPE, 1997

Map 3-10



**Teenage Mothers with Repeated Births 1994 - 1995**

☆ The town percentage of teenage mothers with repeated births is significantly higher than the state percentage of 20.8 (p<0.01).  
\* Percentages are not calculated when the number of events is less than 5.  
Source: DPH, OPPE, 1997

## INFANT MORTALITY AND FETAL DEATHS

In 1993, the U.S. infant mortality rate<sup>16</sup> ranked behind 22 other nations, including Hong Kong, Singapore, and Norway, and was nearly twice as high as the top-ranked country, Japan.<sup>17</sup> Within some cities the infant mortality rate was significantly worse than for the country as a whole. Although the overall rate in Connecticut was low compared to other states, the 1994 rates in certain Connecticut cities, such as Hartford, New Haven, and Bridgeport, were comparable to infant mortality figures in the cities of Chicago, Philadelphia, Memphis, and Baltimore for the same year.<sup>18</sup> Of these seven cities, Hartford had the highest rate with 19.5 deaths per 1000 live births, and Chicago had the lowest with 12.5.

From 1986 to 1995, Connecticut's infant death rate fell from 9.0 to 7.3 deaths per 1,000 live births (Figure 3-3), almost reaching the year 2000 objective of 7.0. Infant mortality includes neonatal (less than 28 days old) and postneonatal (29 to 365 days old) mortality figures. Neonatal deaths are frequently associated with circumstances related to conditions of the pregnancy and delivery, whereas postneonatal deaths are associated with environmental conditions, risk exposures, and access to health care during the first year of life. The decline in Connecticut's infant mortality rate was due largely to decreasing neonatal mortality rates. In contrast, neither the postneonatal nor the fetal death rates dropped during the same period. Fetal deaths, like neonatal deaths, may be prevented through the use of appropriate pre-conception and prenatal care. Fetal deaths outnumbered neonatal deaths in Connecticut from 1987-1995.

### High Risk Groups

The infant mortality experience of whites remained relatively stable from 1986-1995, while there was an unsteady declining trend for blacks (Figure 3-4). The infant mortality rates for blacks exceeded the rates for whites in all years from 1986 to 1995. This gap reflects the consistently higher prevalence among blacks for other risk factors, such as birth rates among teenage women, lack of adequate prenatal care, and low birthweight. Each of these indicators are described further later in this section.

### Modifiable Risk Factors and Potential for Intervention

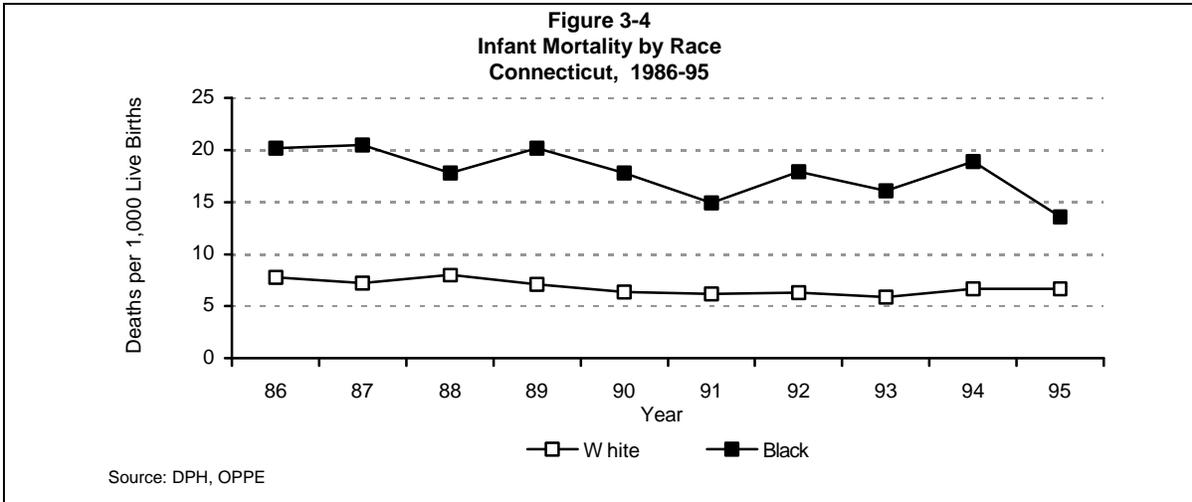
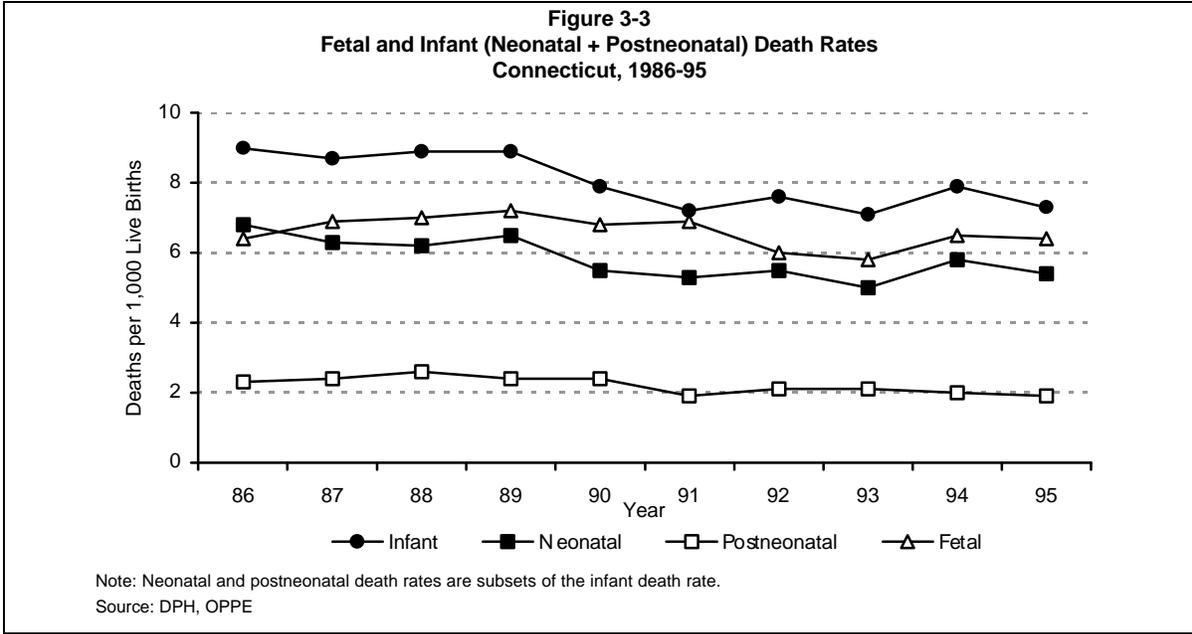
Improvements in the infant mortality rate are believed to be due to the efficacy of newborn intensive care units, with improved survival mainly for infants of moderately low birthweight. Further reductions in infant mortality and morbidity will require new strategies to modify the behaviors and lifestyles that affect birth outcomes, such as smoking, drinking, drug use, and utilization of prenatal care services. Efforts such as improved prenatal care by means of comprehensive programs to improve pregnancy outcomes can reduce neonatal mortality. Targeting prevention programs to groups showing a high rate of low and very low birthweight infants (such as the urban centers or the state's black population) can produce the greatest effect on reducing the overall neonatal mortality rate in the state.

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<sup>16</sup> Deaths to infants less than one year old.

<sup>17</sup> U. S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, National Center for Health Statistics. *Health, United States, 1996-97 and Injury Chartbook*. Hyattsville, MD: DHHS publication (PHS)97-1232. 1997 July.

<sup>18</sup> Annie E. Casey Foundation. *City Kids Count Report*. 1997.



Leading causes of postneonatal death include birth defects, sudden infant death syndrome, infections, and injuries. Interventions aimed at linking newborns with accessible, on-going, and culturally-sensitive primary care can provide effective education and services to avoid or minimize the effects of these threats to the postneonate.

A large percentage of fetal deaths is attributed to lethal malformations. Better medical evaluation of fetal deaths with genetic screening and counseling may help to prevent fetal deaths. Interventions to address known causes of fetal death include improved prenatal diagnosis and treatments of maternal morbidities, such as hypertension and maternal-fetal infections, and efforts to reduce maternal cigarette smoking and the use of illegal drugs.

Programming within the Bureau of Community Health's Maternal and Child Health (MCH) area to prevent infant mortality is aimed at the period before conception, along with the prenatal and postnatal periods. Pre-conception interventions aimed at school-aged audiences and women of childbearing age include: primary care services; targeted health education programs; and outreach and case-finding to link individuals and families to primary and preventive services. Prenatal efforts are focused on getting mothers into regular care early in the pregnancy and keeping both regular and specialty care appointments as directed by their physician. Postnatal efforts include medical testing for genetic disorders and maintaining good health for normal infants and their mothers. The WIC program (Special Supplemental Food Program for Women, Infants and Children), for example, promotes breast feeding of infants for at least the first three months of life.

## BIRTHS TO TEENS AND WOMEN AGED 40-44 YEARS

Women at both extremes of the age distribution are more likely to have poor pregnancy outcomes than women in their middle years. Births to teenage mothers are important for a variety of reasons. Teen mothers are more likely to have unplanned, unwanted pregnancies, and to become single parents. Being a young single parent imposes extra demands on the mother, which may result in her being less likely to complete high school, to find adequate employment and to have enough time to interact with her child. Teen mothers are at an increased risk of having a low birthweight baby, and the risk of infant mortality may also be elevated, particularly for young teenage mothers. In 1995, women aged 15-19 had the greatest risk of delivering a low birthweight baby (Table 3-6). The risk diminished as women aged, until ages 35-39 years, when it gradually began increasing.

For Connecticut teens under the age of seventeen, neonatal mortality and postneonatal mortality were also higher, relative to older women by factors of about 2 and 3, respectively, for the period 1981 to 1985.<sup>19</sup> In 1995, ten years later, the infant mortality rate for women under age 18 is still about two to three times higher than for women in their middle years (under 18 years, 15.2 per 1,000 births; 25-29 years, 6.8 per 1,000 births; 30-34 years, 4.6 per 1,000 births).<sup>20</sup>

Between 1986 and 1995, birth rates among 15-19 year olds increased slightly (Figure 3-5). The birth rate for teenage mothers was at its lowest in 1983 (29.7 per 1,000 population, not shown) and at its highest in 1994 (41.4 per 1,000). Over the same period birth rates also increased slightly among the 40-44 year old group. The greatest increase occurred among women in the 30 to 34 age group, one of the groups with the lowest risk.

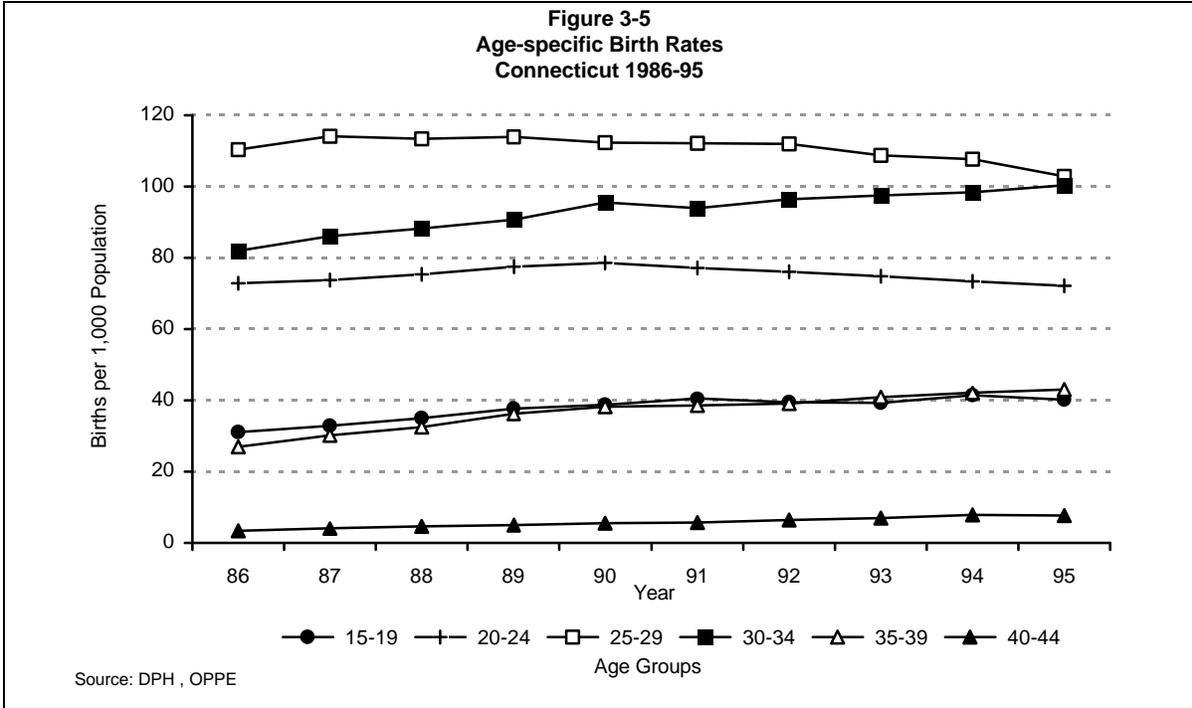
**Table 3-6**  
**Relationship of Mother's Age to Low Birthweight**  
**Connecticut, 1995**

Age Groups	Percent Low Birthweight	Relative Risk
15-19	10.8	1.70
20-24	7.0	1.10
25-29	6.5	1.00
30-34 <sup>a</sup>	6.4	1.00
35-39	7.5	1.20
40-44	7.9	1.22

<sup>a</sup>This group had the lowest percent low birthweight, and was thus the reference group for estimating relative risk.

<sup>19</sup> Mueller L, Weintraub L. *Draft: Cumulative risk factor assessment based on the 1981-85 birth-infant death cohort*. Hartford, CT: Connecticut Department of Health Services, Division of Health Surveillance and Planning. 1988 November. (1981-85 are the most recent years for which linked birth and death data are available.)

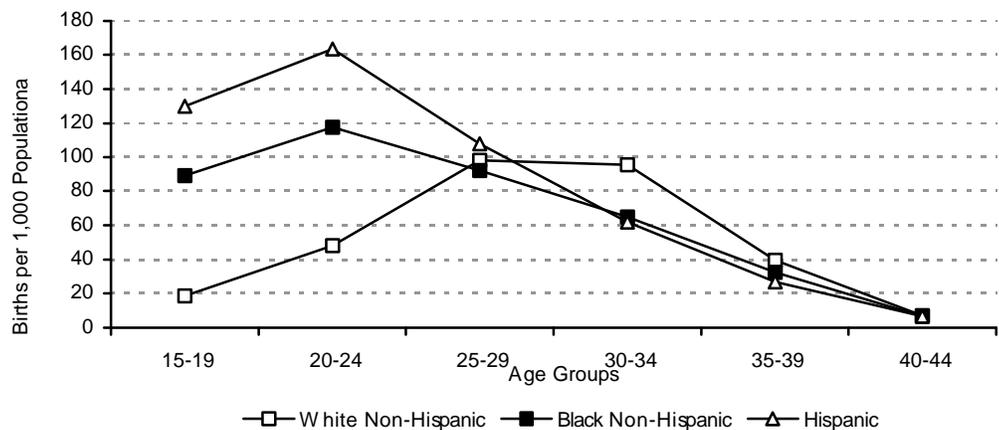
<sup>20</sup> Connecticut Department of Public Health. Unpublished data from the Connecticut 1995 birth-infant death cohort.



Birth rates among teens also varied substantially by town. Women between the ages of 15 and 17 are the focus of the Year 2000<sup>21</sup> adolescent pregnancy objective #5.1. One component of pregnancy statistics is abortion counts, which Connecticut does not record at the town level. Consequently *births* to women 15-17 years is often employed as a town-level surrogate measure. The birth rate for females aged 15-17 was four times higher in Hartford than the statewide rate of 2.7% in 1990. Eight towns had rates that were 1.6 times or more above the state rate (Table 3-7).

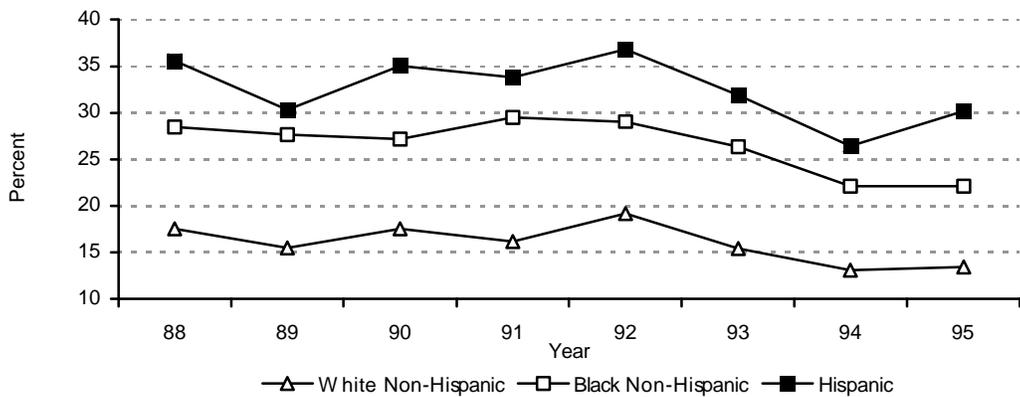
<sup>21</sup> U. S. Department of Health and Human Services, Public Health Service. *Healthy People 2000: National Health Promotion and Disease Prevention Objectives*. Washington DC: Public Health Service. 1990.

**Figure 3-6**  
**Age-specific Birth Rates by Race and Ethnicity**  
**Connecticut, 1994**



\* Age specific population estimates by race and ethnicity for Connecticut were not available for 1995.  
 Source: DPH, OPPE

**Figure 3-7**  
**Percentage of Repeated Births to Mothers**  
**Aged 15-19 by Race and Ethnicity**  
**Connecticut, 1988-95**



Source: DPH, OPPE

**Table 3-7**  
**Birth Rates among Females Aged 15-17 Years**  
**Connecticut, 1990<sup>a</sup>**

Town of Residence	Rate per 100 Population	Town/State Ratio
Hartford	10.7	4.0
Bridgeport	8.6	3.2
New Haven	7.9	2.9
New London	7.5	2.8
Waterbury	6.1	2.3
New Britain	5.7	2.1
Windham	4.7	1.7
Meriden	4.2	1.6
All Connecticut Towns	2.7	1.0

<sup>a</sup> 1990 is the most recent year for which detailed age-sex population figures were available based on the U.S. Census. Source: DPH, OPPE

### Modifiable Risk Factors and Potential for Intervention

Teen pregnancy is considered a public health problem for several reasons related to the health of both mother and newborn. Early sexual activity can result in a higher risk for sexually transmitted diseases, which could harm the fetus and impair the future fertility and health of the mother. Preventive interventions to address teen pregnancy include programs to delay the onset of sexual activity, promote abstinence as the social norm, reduce the number of adolescents who have sex at young ages, and increase the numbers of sexually active adolescents who use contraceptives effectively.

State-sponsored programs provide both contraceptive services and prenatal care for teens in specialized programs such as the APP/YPP (Adolescent Pregnancy Prevention/Young Parents' Program) programs. Teen planning grants, a new initiative in 1997, targeted teen pregnancy prevention in the ten communities in the state with the highest teen birth rates.

State programs are also directed towards preventing repeat births among teenage mothers. One of the goals of the programs is to maximize the health of its participants, while trying to promote a healthy social/economic future for the teens. One way this is accomplished is by joining forces with the educational system to encourage teen mothers to finish high school.

### PRENATAL CARE

If late care were eliminated and all women also received the appropriate minimum number of prenatal visits, then low birthweight deliveries would decrease by about 15%.<sup>22</sup> Prenatal care utilization is assessed using two risk indicators. The first indicator, "late or no care," identifies mothers who did not receive care during the first trimester (i.e., within the first 13 weeks) of pregnancy. The second indicator, "non-adequate care," is a composite index (a modified Kessner Index), reflecting both the time of the first visit and the number of visits. In Connecticut, the elimination of non-adequate care could reduce infant mortality by an estimated 15% overall. Among black infants, non-adequate care is more common, and its elimination could result in a estimated 24% infant mortality reduction.<sup>23</sup>

**Table 3-8**  
**Relationship of Prenatal Care to Low Birthweight**

<sup>22</sup>Institute of Medicine, National Academy of Sciences. *Preventing Low Birthweight*. Washington, DC: National Academy Press. 1985.

<sup>23</sup>Mueller LM, "Estimated impact of eliminating non-adequate prenatal care toward lowering infant mortality in Connecticut," Connecticut Department of Public Health, March 1990.

**Connecticut, 1995**

Prenatal Care Risk Factor	Percent Low Birthweight	Relative Risk
<i>Trimester Prenatal Care Began</i>		
None	26.6	4.0
First Trimester <sup>a</sup>	6.6	1.0
Second Trimester	8.2	1.2
Third Trimester	8.0	1.2
<i>Adequacy of Prenatal Care</i>		
Adequate <sup>a</sup>	6.0	1.0
Intermediate	8.2	1.4
Inadequate	18.3	3.1

<sup>a</sup>This group had the lowest percent low birthweight, and was thus the reference group for estimating relative risk.  
Source: DPH, OPPE

Prenatal care should be initiated during the first trimester of pregnancy. Prenatal care utilization has been quite good in Connecticut. In 1995 only about 12.3% of Connecticut women did not receive early care (about half the U.S. percentage). The CDC ranked Connecticut as one of the two best states for this indicator in 1992.

Late prenatal care is defined as care initiated in the second or third trimester of pregnancy. Connecticut's experience over the ten years since 1986 showed some worsening followed by improvement starting in 1989. While blacks and Hispanics experienced much higher percentages than whites or the state as a whole, their rate of improvement over time has been much better than the rate for whites (Figure 3-8).

Non-adequate prenatal care is a summary measure of prenatal care initiation and the number of prenatal visits. The "non-adequate" grouping includes both "inadequate" and "intermediate" care as defined in the Kessner Index of prenatal care.<sup>24</sup> The 1986-1995 trends for non-adequate care, and the differences by race, parallel those provided for late or no prenatal care (Figure 3-9).

#### Modifiable Risk Factors and Potential for Intervention

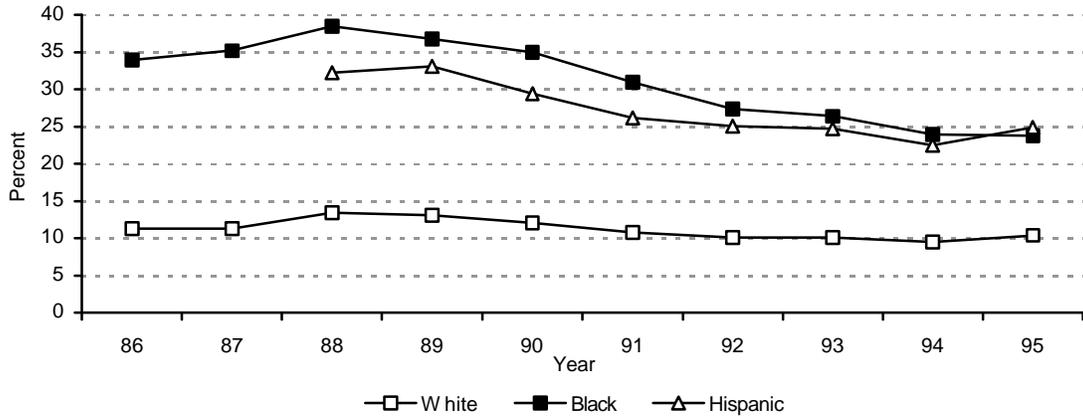
Good prenatal care is a cornerstone of prevention for both infant mortality and morbidity. An expectant mother with no prenatal care is three times more likely than mothers with appropriate care to have a low birthweight baby. Low birthweight is associated with a variety of medical problems and increased risk of mortality, especially for the pre-term infant. Ensured access to care, together with comprehensive approaches to prenatal care that include "flexible combinations of education, psychosocial and nutritional services, and certain clinical interventions such as a low threshold for hospitalization, careful screening for medical risks, and rapid response to signs of early labor,"<sup>25</sup> hold the promise of considerable improvement in birth outcomes and the health of both mother and child.

DPH has tried to improve access to prenatal care through several strategies, such as supporting sites for primary care and free pregnancy testing at family planning clinics. At these sites, patients are appropriately referred for early prenatal care, in keeping with established protocols. Further work is needed to address prenatal care, however. Involvement of minority representatives with local state-supported groups, and the concentration of primary care services in high-need areas, are part of an overall strategy to improve prenatal care and birth outcomes for Connecticut women.

<sup>24</sup> Kessner, D.M., J. Singer, C.E. Kalk, and E.R. Schlesinger. Infant death: An analysis by maternal risk and Health care. *Contrasts in Health Status, Vol. 1.* Washington, D.C: Institute of Medicine, National Academy of Sciences. 1973.

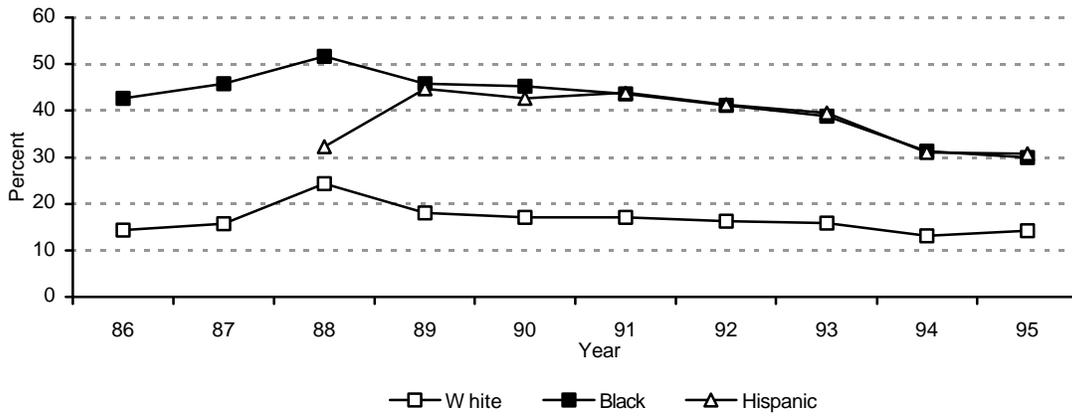
<sup>25</sup> Institute of Medicine, National Academy of Sciences, *Preventing Low Birthweight.* Washington, DC: National Academy Press. 1985.

**Figure 3-8**  
**Births to Women Who Received Late or No Prenatal Care**  
**Percentage by Race & Ethnicity**  
**Connecticut, 1986-95**



Note: Ethnicity data first became available on Connecticut birth certificates in 1988.  
 Source: DPH, OPPE

**Figure 3-9**  
**Births to Women Who Received Non-adequate Prenatal Care**  
**Percentage by Race and Ethnicity**  
**Connecticut, 1986-95**



Note: Ethnicity data first became available on Connecticut birth certificates in 1988.  
 Source: DPH, OPPE

## LOW BIRTHWEIGHT

Low birthweight refers to infants weighing less than 2,500 grams (about 5.5 pounds) at delivery. Birthweight in general is a measure of the adequacy of fetal growth during pregnancy, and low birthweight can result from prematurity (gestational age <37 weeks), intrauterine growth retardation, or other factors. Low birthweight is a major cause of infant mortality and long-term health problems, and decreasing birthweights under 2,500 grams are associated with increasing risk of death within the first year of life. Low birthweight infants account for less than 7% of all live births in the United States, but they account for nearly 60% of all infant deaths.<sup>26</sup> The impact of low birthweight on infant mortality occurs primarily during the first 28 days of life (the neonatal period), when low birthweight infants are about 40 times more likely than normal-weight infants to die. For very low birthweight infants (less than 1,500 grams or 3 lbs. 3 oz.) the risk of death is 200 times higher than among normal-weight newborns.

The 1995 Connecticut figures are even more pronounced, with low birthweight accounting for about 7% of births and 69% of infant deaths. Relative to normal weight babies in Connecticut, low weight increased the risk of neonatal death over 50 times (from 1.2 to 59.8 deaths per 1,000 births), and over 203 times among very low birthweight deliveries.

In addition to increased risk of mortality, low and very low birthweight are associated with increased risk of disability, such as mental retardation, cerebral palsy, and vision and hearing disabilities. Advances in neonatal medicine have increased the survival of low and very low birthweight infants. While many of these low birthweight survivors will lead normal lives, it is clear that “serious questions remain about how these infants will develop and whether they will have normal productive lives. Given the increasing number of survivors of extreme prematurity and the high health care and educational costs involved, it is crucial that we appreciate the full extent of any adverse outcomes.”<sup>27</sup> Low birthweight is, however, a preventable condition. By improving maternal health before conception using appropriate family planning and prenatal care services, many of the conditions that lead to the slow growth and/or prematurity of a low-birthweight infant can either be eliminated or ameliorated.

Percentages of low birthweight in Connecticut remained fairly constant between 1986 and 1995, with whites having lower percentages than Hispanics and blacks (Figure 3-10).

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<sup>26</sup> U.S. Public Health Service, *Health United States (1989)*, (PHS #90 - 1232), Hyattsville, MD, p 12.

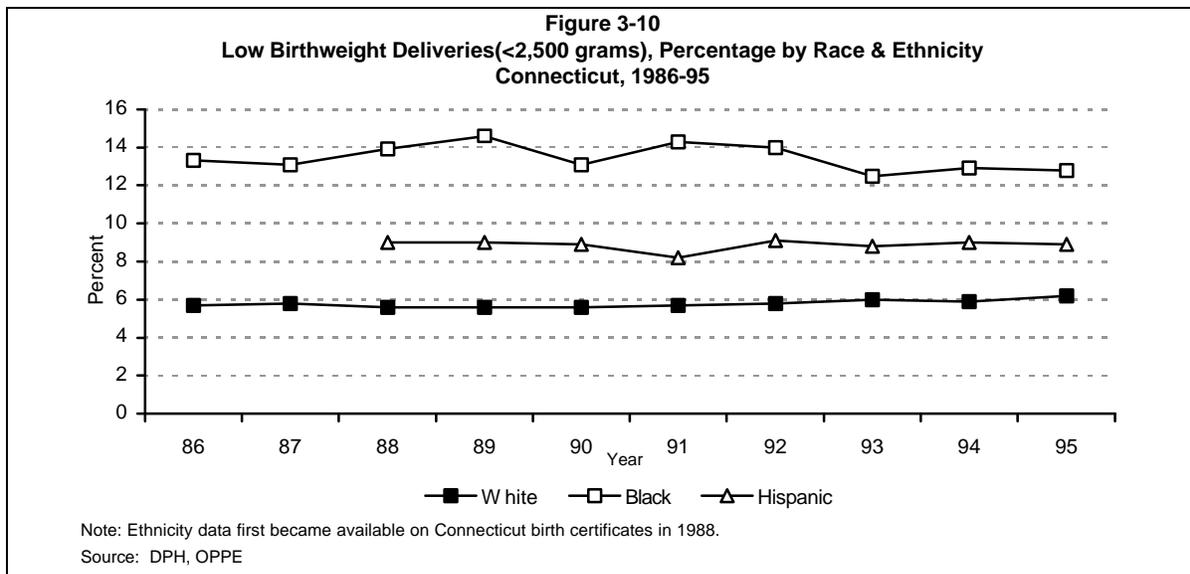
<sup>27</sup> Hack M, Klein N, Taylor HG. Long term developmental outcomes of low birthweight infants. *The Future of Children* 1995 Spring;5(1):176-193.

## Modifiable Risk Factors and Potential for Intervention

Prevention of low birthweight is considered to be the major objective of public health and medical interventions whose goal is to reduce infant mortality. Six risk factors for low birthweight birth are:

1. Demographic characteristics, such as low socioeconomic status, low level of education, nonwhite race (particularly black), childbearing at extremes of the reproductive age span, and being unmarried;
2. Medical risks that can be identified before pregnancy, such as a poor obstetric history, certain diseases and conditions, and poor nutritional status;
3. Problems that are detected during pregnancy, such as poor weight gain, bacteriuria, toxemia/pre-eclampsia, short inter-pregnancy interval, and multiple pregnancy;
4. Behavioral and environmental risks, such as smoking, alcohol and other substance abuse, and exposure to various toxic substances;
5. Health care risks of absent or inadequate prenatal care; and
6. Evolving concepts of risk, such as stress, uterine irritability, certain cervical changes detected before the onset of labor, some infections, inadequate plasma volume expansion, and progesterone deficiency.<sup>28</sup>

Increasing access to prenatal care and improving the content of care remain key concerns. Improvements in these factors should affect other modifiable risk factors favorably. For example, cigarette smoking is the single largest modifiable risk factor for low birthweight and infant mortality. Interventions to diminish cigarette smoking in pregnant women could have far-reaching benefits for both mother and child.



<sup>28</sup> Institute of Medicine, National Academy of Sciences. *Preventing Low Birthweight*. Washington, DC: National Academy Press. 1985.

# BEHAVIORAL RISKS

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## HIGHLIGHTS

- Nearly one-fifth of all deaths in the U.S. and in Connecticut are estimated to be related to tobacco smoking.
- About 3 in 10 high school students currently smoke.
- Of all respondents aged 18+, 2.5% reported that they drink and drive. Between 1990 and 1995, the rate of binge drinking among 18-24 year olds decreased in Connecticut.
- More than 20% of Connecticut adults do not engage in any leisure time physical activity.
- One-quarter of Connecticut's adult population is overweight. About 1 in 5 women and nearly 3 in 10 men were considered overweight, based on their self-reported height and weight.
- Nearly 1 in 5 adults has been told by a health professional that his or her blood pressure is high.
- Two-thirds of Connecticut adults do not eat the recommended total of five fruits and vegetables daily.

## INTRODUCTION

The Behavioral Risk Factor Surveillance System (BRFSS) is a statewide telephone survey of non-institutionalized adults aged 18 and older that provides prevalence estimates for key behavioral risk factors. Many of the risk factors assessed are directly related to several of the chronic disease conditions described in the *Chronic Diseases* section of this chapter. Table 3-9 provides a concise overview of the relationship between several modifiable risk factors (including behavioral factors) and various chronic diseases.

**Table 3-9**  
**Interrelationships between Various Chronic Diseases and Modifiable Risk Factors**  
 (+ = Established risk factor, ? = Possible risk factor)

Risk Factor	CVD <sup>b</sup>	Cancer	Chronic Lung Disease	Diabetes	Cirrhosis	Musculo-skeletal Disease	Neuro-logic Disorder
Tobacco Use	+	+	+			+	?
Alcohol Use	?	+			+	+	+
High Cholesterol	+						
High Blood Pressure	+						
Diet	+	+	?	?		+	?
Physical Inactivity	+	+		+		+	
Obesity	+	+		+		+	+
Stress	?	?					
ETS <sup>c</sup>	?	+	+				
Occupation		+	+		?	+	?
Pollution		+	+				+
Low SES <sup>d</sup>	+	+	+	+	+	+	

<sup>b</sup> CVD = Cardiovascular disease, <sup>c</sup> Environmental Tobacco Smoke, <sup>d</sup> SES = Socioeconomic Status  
 Source: Chronic Disease Epidemiology and Control, R.C. Brownson, P. L. Remington, J. R. Davis, (Eds.) American Public Health Association, 1993.

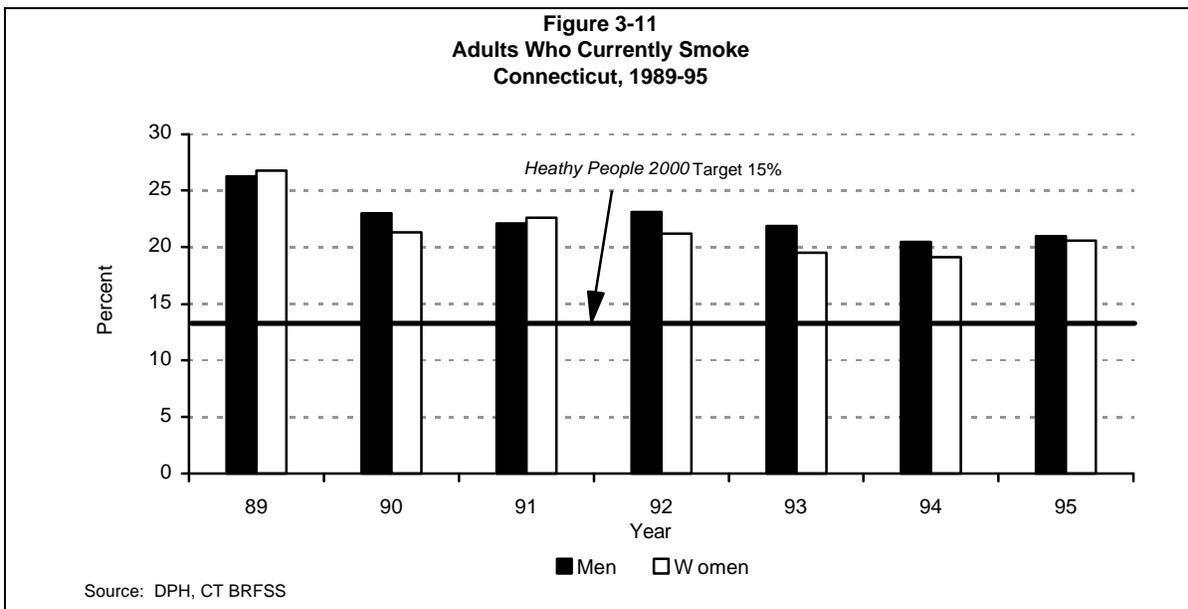
## TOBACCO

## Summary

Cigarette smoking is the single most important avoidable cause of death in the United States, estimated to cause over 400,000 deaths each year<sup>29</sup>. For 1989 it was estimated that 19% of all deaths in Connecticut (5,446 of 28,130) were related to smoking. Cardiovascular disease and cancer, especially lung cancer, accounted for the largest number of deaths, but other causes of death attributed in part to smoking included cervical and bladder cancer, pneumonia, influenza, chronic obstructive pulmonary disease, burns, and diseases of newborns including sudden infant death syndrome and respiratory diseases<sup>30</sup>.

## Time Trends

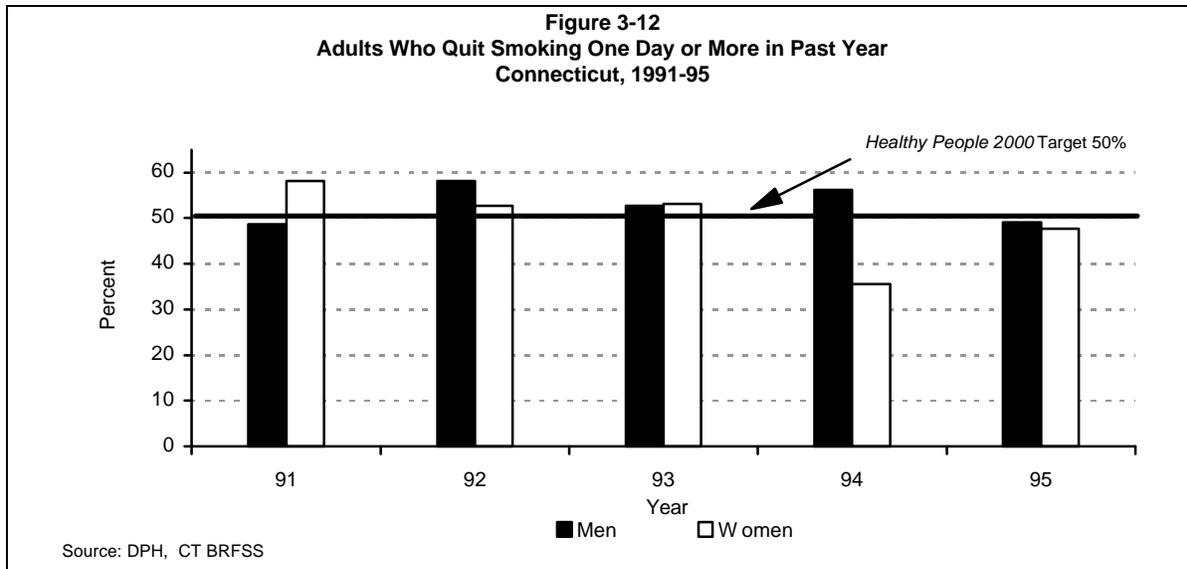
All BRFSS respondents were asked if they had smoked 100 cigarettes in their lifetime, and if so, did they currently smoke. From the responses, the proportion of people who had never smoked, former smokers, and current smokers could be determined. Current smokers were asked if they had quit smoking for a day or more in the past year. Additional questions have been asked in recent years to determine the prevalence of irregular smoking, or smoking on less than 30 of the past 30 days.



About 1 in 5 adults (20.8%) in the state reported current smoking in 1995, down from 1 in 4 in 1989 (Figure 3-11). While the rate was still above the *Healthy People 2000* and *Healthy Connecticut 2000* target of 15%, the overall trend is improvement. Compared with other states that participate in the BRFSS, the prevalence of smoking in Connecticut is below the median 22.4%. The prevalence of irregular smoking (2% of all respondents or about 10% of all smokers in 1995), which is included in the prevalence rate, appears to be low but increasing.

<sup>29</sup> McGinnis JM, Foege WH. Actual causes of death in the United States. *Journal of the American Medical Association*. 1993;270:2207-2212.

<sup>30</sup> Adams ML. The public health impact and economic cost of smoking in Connecticut- 1989. *Connecticut Medicine*, 1994;58:195-198.



Each year between 1991 and 1993, over half of current smokers reported quitting for at least one day in the past year. This measure meets the national *Healthy People 2000* objective of 50%, but not Connecticut's target of 60%. In 1994 and 1995, this rate dropped below 50% so neither objective was met (Figure 3-12). As the prevalence of smoking declines and the group of smokers consists of those who find it hardest to quit, this rate may decrease further.

### High Risk Populations

Persons who are out of work and high school dropouts have a higher prevalence of current smoking than others. Because of the addictive nature of tobacco and the fact that most smokers begin before the age of 20, teens are a high-risk group. The prevalence in 1995 of weekly or daily smoking was 18% among 9th graders and 25% for 11th graders<sup>31</sup>. Similarly, 30.6% of males and 29.0% of females in grades 9-12 reported using cigarettes in the past 30 days, with suburban students reporting higher rates than urban youth<sup>32</sup>. Women of childbearing age are particularly important because low birthweight and increased infant mortality are associated with cigarette smoking by pregnant women. The smoking prevalence among Connecticut women aged 18-44 in 1995 was 23.5%, which is higher than that for all adults.

### Potential for Intervention

Smokers who quit can reap immediate and significant health benefits. Even reducing the number of cigarettes smoked can add to life expectancy<sup>33</sup>. Smoking cessation programs for adults who smoke should be offered and should be viewed as a substance abuse cessation program. Efforts should be made to encourage or mandate managed care organizations to cover costs for smoking cessation programs, nicotine patches, and other medications, as they now cover drug or alcohol abuse rehabilitation programs.

As most smokers begin smoking before age 20 and it is so difficult to quit, reducing the use of cigarettes by youth may be a more effective intervention than smoking cessation efforts targeting adults. Other interventions might focus on cutting back on smoking and reducing the exposure of non-smokers to environmental tobacco smoke. Policy and environmental changes can also be effective in many instances.

<sup>31</sup> Beuhring T, Saewyc EM, Billian Stern C, and Resnick MD. *Voice of Connecticut Youth: A Statewide Survey of Adolescent Health*. Hartford, CT: Connecticut Department of Public Health. 1996.

<sup>32</sup> Connecticut Department of Mental Health and Addiction Services. *Adolescent Substance Abuse Treatment Needs Assessment: The 1995 Adolescent Alcohol and Drug Use School Survey*. Hartford, CT: Connecticut DMHAS. 1996.

<sup>33</sup> Tsevat J, et al. Expected gains in life expectancy from various coronary heart disease risk factor modifications. *Circulation*. 1991;83:1194-1201.

For example, increasing the cigarette tax tends to reduce smoking, especially among younger smokers. Workplace and other smoking restrictions may also be effective in encouraging quitting.

The Federal Drug Administration recently amended regulations pertaining to cigarette distribution and advertising in an effort to combat tobacco use, especially among youth. The recent settlement between tobacco companies and state Attorneys General is another attempt to reduce smoking and discourage young people from starting. This historic agreement, which is not yet in its final form, has the potential to greatly affect tobacco use in this country.

### Intervention Strategies

- Implement the policy changes in the proposed settlement between the tobacco companies and the state Attorneys General.
- Discourage lawmakers from accepting political contributions from tobacco companies.
- Ensure medical coverage by Medicaid, Blue Cross and other third party payers for clinically proven cessation programs.
- Provide tobacco education as part of comprehensive school health education aimed at preventing initiation of tobacco use and avoiding exposure to environmental tobacco smoke.
- Promote affordable, accessible, and culturally appropriate smoking cessation programs.
- Encourage the adoption of policies in work sites, public places, and even households that reduce exposure to environmental tobacco smoke, especially for children.
- Assure adequate enforcement of all smoking policies and environmental restrictions.

## ALCOHOL

### Summary

Abuse of alcohol has been linked to a variety of diseases including heart disease, liver, oral and esophageal cancer, hepatitis, gastrointestinal disorders, cirrhosis of the liver, and mental illness<sup>34</sup>. Alcohol is estimated to be a factor in half of all motor vehicle fatalities. In addition, alcohol use by pregnant women can adversely affect birth outcomes, resulting in low birthweight or babies born with fetal alcohol syndrome.

### Time Trends

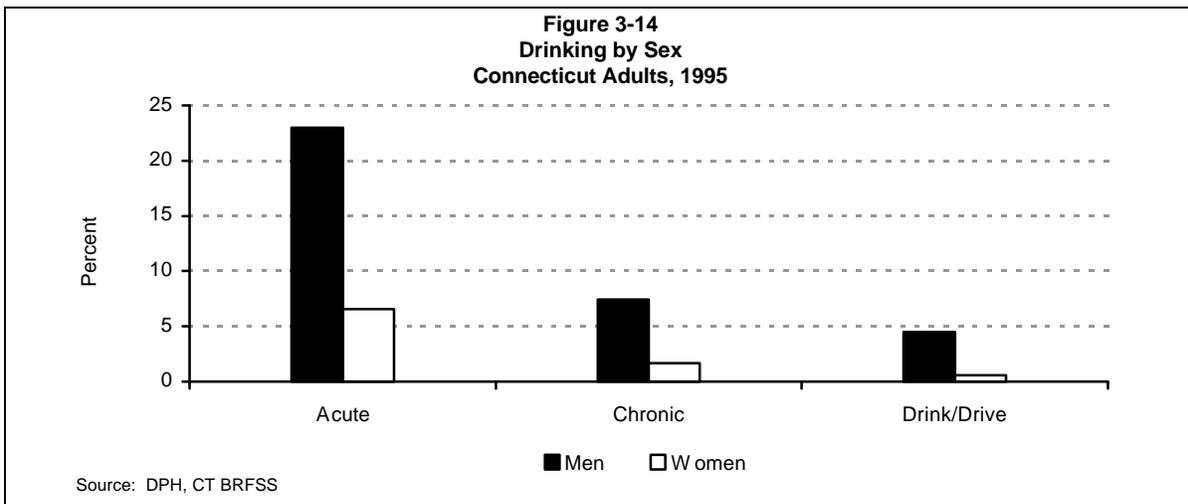
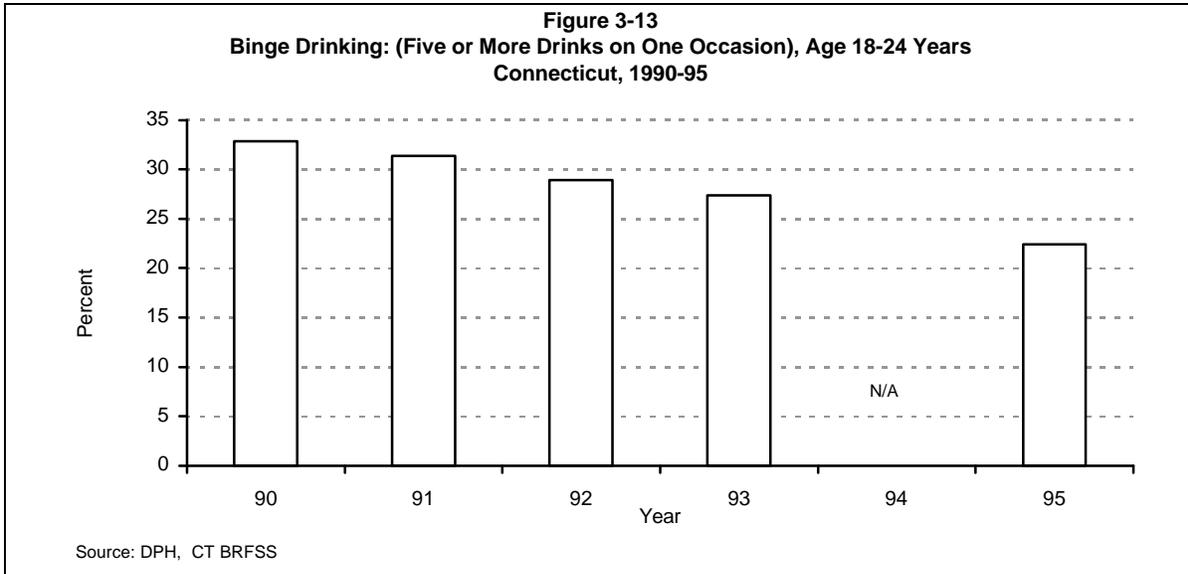
Questions on the BRFSS address different measures of alcohol consumption. Respondents are asked if they have had at least one drink of any alcoholic beverage such as beer, wine, wine coolers, or liquor in the past month, and those answering “yes” are considered current drinkers. Each year about two-thirds of Connecticut adults report consuming alcohol in the previous month, a figure that is well above the median for all states. In 1995, the prevalence of current drinking in Connecticut was 64.8%, with a median for all states of 52.7% and a range from 27.4% to 69.6%. Chronic drinking of 60 or more drinks per month, acute or binge drinking of 5 or more drinks on an occasion in the past month, and drinking and driving are also measured. The prevalence of binge drinking in 1995 was 14.4%, chronic drinking was 4.4%, and drinking and driving was 2.5%. Only binge drinking by college students is related to a *Healthy People 2000* objective, with a target of 32%. While not an exact measure of the objective, the BRFSS data for acute drinking among 18-24 year olds can provide consistent data over time to serve as an indication of the time trend. Between 1990 and 1995, the rate of binge drinking among 18-24 year olds in Connecticut decreased from 32.9% to 22.4% (Figure 3-13).

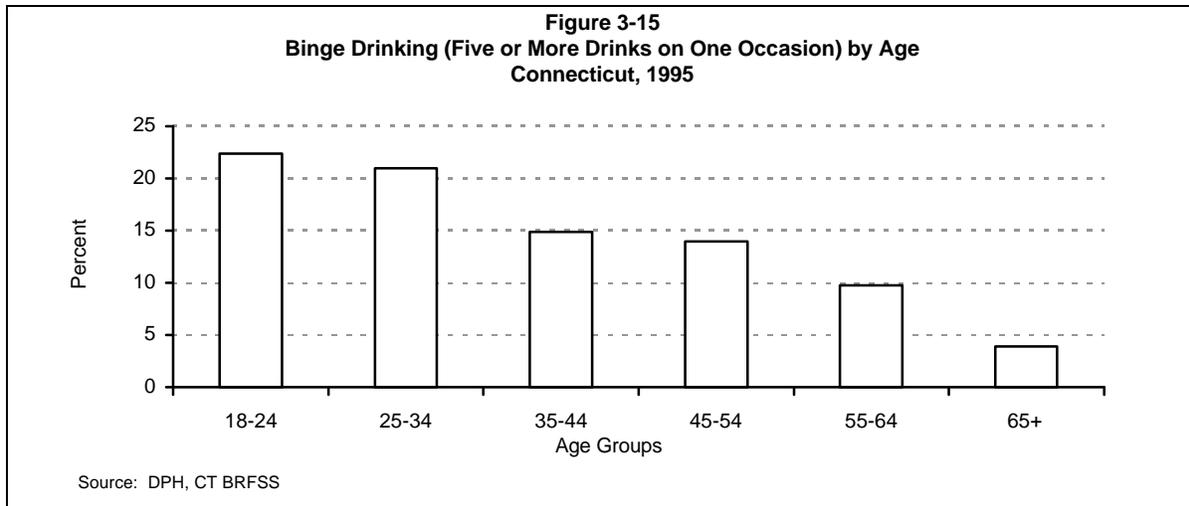
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<sup>34</sup> Stroudemire A, Wallack L, Hedemark BS. Alcohol dependence and abuse. In: *Closing the Gap: The Burden of Unnecessary Illness*. Amler and Dull, eds. Oxford University Press. 1987.

## High Risk Populations

Men and young people are at higher risk than others for alcohol use and abuse (Figures 3-14 and 3-15). Non-whites overall and non-white females are at lower risk than whites for binge drinking.





### Intervention Strategies

- Enhance resources for treatment of alcohol abuse and other forms of substance abuse, including outpatient treatment, detoxification, and short- and long term residential treatment.
- Provide accessible and culturally appropriate substance abuse services and expand services in prisons.
- Remove barriers to substance abuse treatment by providing transportation, child care, housing, and vocational and educational support as needed.
- Assure outreach and case management services to substance abusing pregnant women, mothers, youth, and other underserved populations.
- Assure adequate enforcement of policies relating to drug offenses, drunk driving (and boating), and sale and possession of alcohol and controlled substances.

## PHYSICAL INACTIVITY

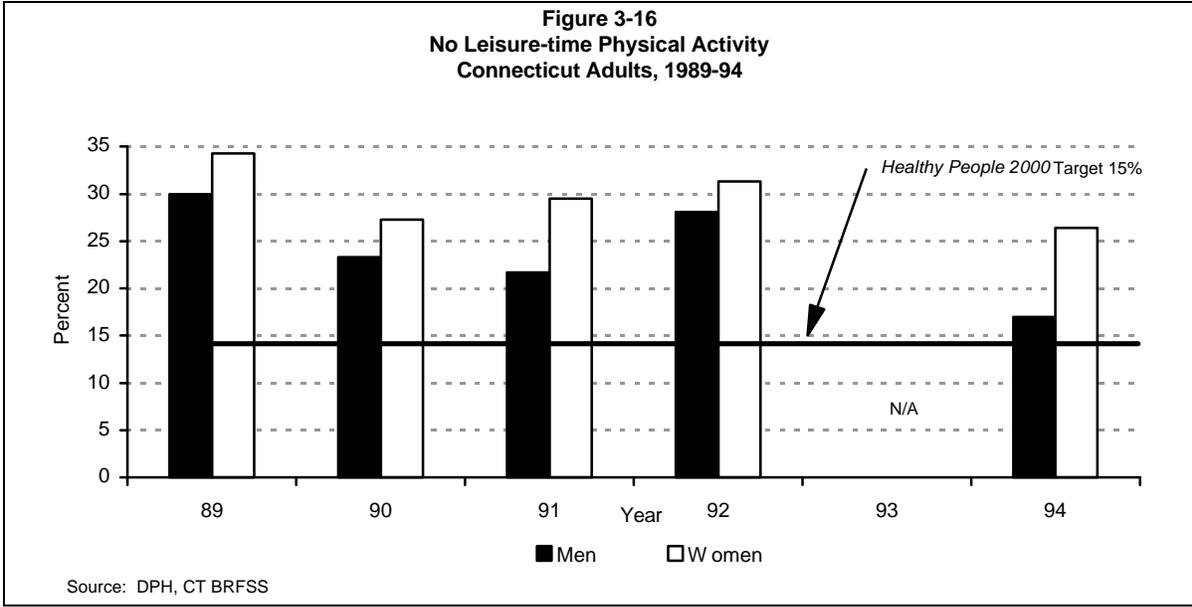
### Summary

Regular exercise decreases the risk of coronary heart disease and overall mortality. Poor diet and physical inactivity together are estimated to cause 300,000 deaths each year in the US<sup>35</sup>. In addition to the potential for reducing mortality, physical activity may also have beneficial effects on hypertension, diabetes, weight control, osteoporosis, anxiety, and depression. Recent studies indicate that 30 minutes or more almost every day of even mild to moderate levels of activity, such as walking, gardening, yard work, or dancing, can improve health and reduce the risk of heart disease.

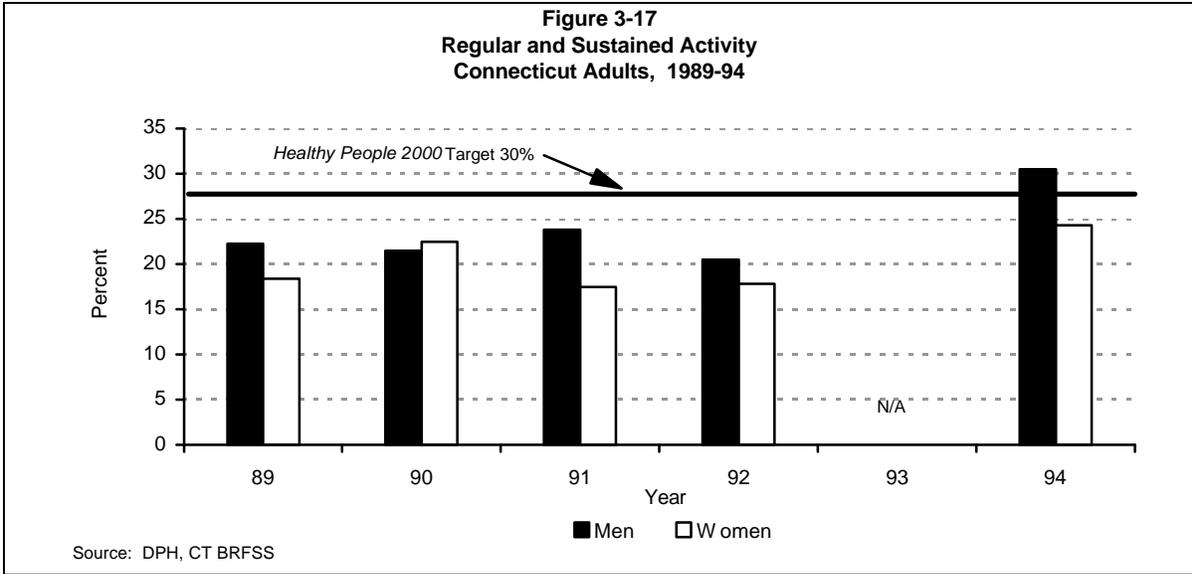
### Time Trends

Between 1989 and 1994, BRFSS respondents aged 18 and older were asked if they participated in any physical activity or exercise outside their regular job duties during the previous month; the question was not asked in 1993. The proportion of adults who reported “no leisure time physical activity” was at least 20% in each of the years reported. In every year, women were more likely than men to report no physical activity (Figure 3-16). For both men and women, the rate of no leisure-time physical activity was consistently greater than the *Healthy People 2000* objective of 15%, although the rate did drop in 1994. The decrease between 1992 and 1994 was statistically significant.

<sup>35</sup> McGinnis JM, Foegen WH. 1993.



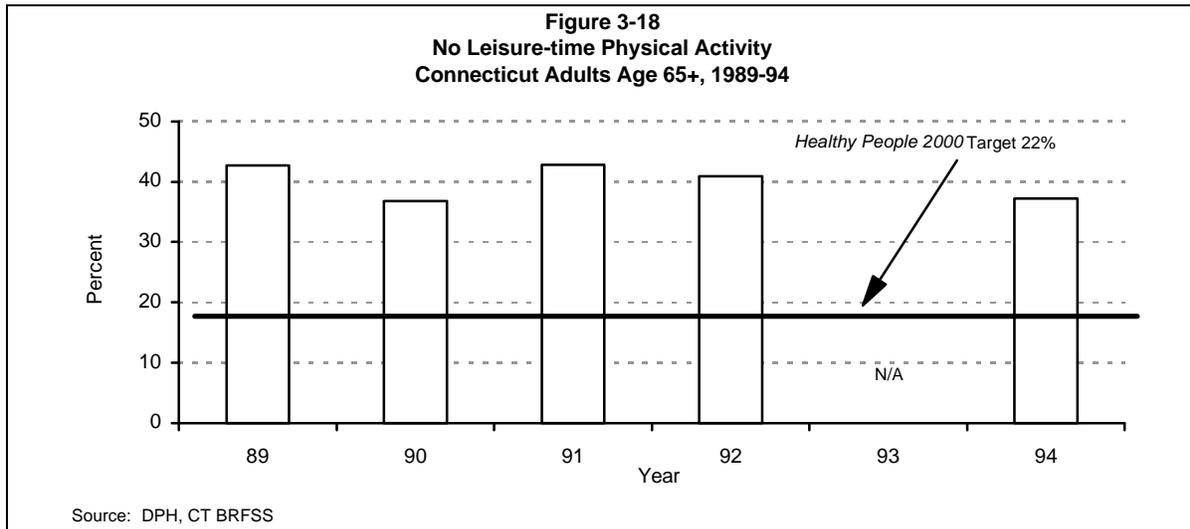
A second physical activity objective pertains to regular and sustained exercise. From the responses, the percentage of adults who were exercising at least 5 times a week for 30 minutes at a time for selected activities was determined. This value was fairly constant for 1989-1992 at about 20% and then increased in 1994. In most years, men were more likely than women to engage in regular and sustained exercise, and in 1994 the *Healthy People 2000* objective was met for men with a rate of 30.3% (Figure 3-17). No data were collected for this objective in 1993.



### High Risk Populations

In 1994, women (26.4%) and non-whites (28.8%) were significantly more likely than men (17.0%) and whites (20.9%), respectively, to report no leisure time physical activity. Non-white women were especially likely to report no leisure time activity, with 41% so reporting. Adults aged 65 and older did not

meet their own target of 22%, with 37.3% reporting no activity (Figure 3-18). Many in this age group did engage in vigorous and regular exercise. People who reported low incomes were also more likely to be sedentary; this may be related to age, however, as the elderly are more likely to have lower incomes.



### Potential for Intervention

Young people should be encouraged to exercise through school and community programs, physical education classes, and family involvement. Adults should be made aware of and encouraged to follow the newer exercise guidelines from the CDC and American College of Sports Medicine calling for moderate exercise on most days accumulated for 30 minutes over the course of the whole day.

### Intervention Strategies

- Beginning at an early age, encourage lifelong physical activity through comprehensive school health education and other programs targeting young people.
- Assist work sites and employers to encourage their employees to maintain healthy lifestyles that include daily physical activity.
- Promote the creation of safe and affordable environments for physical activity, such as bike paths, open space, and greenways.
- Encourage efforts to remove barriers to municipalities and other agencies that might reduce their interest in offering free recreational opportunities.
- Educate the public and health care purchasers about the benefits of physical activity including the new recommendations to accumulate 30 minutes or more of moderate exercise during the course of most days.
- Encourage the development of programs that address physical inactivity in the context of other risk factors, such as obesity or elevated cholesterol.

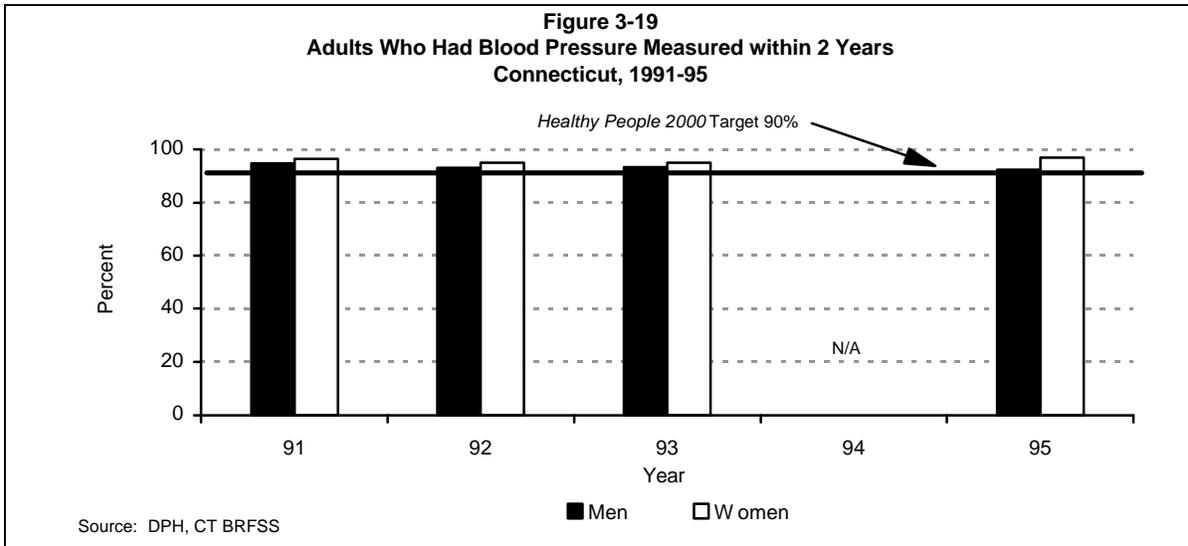
## BLOOD PRESSURE

### Summary

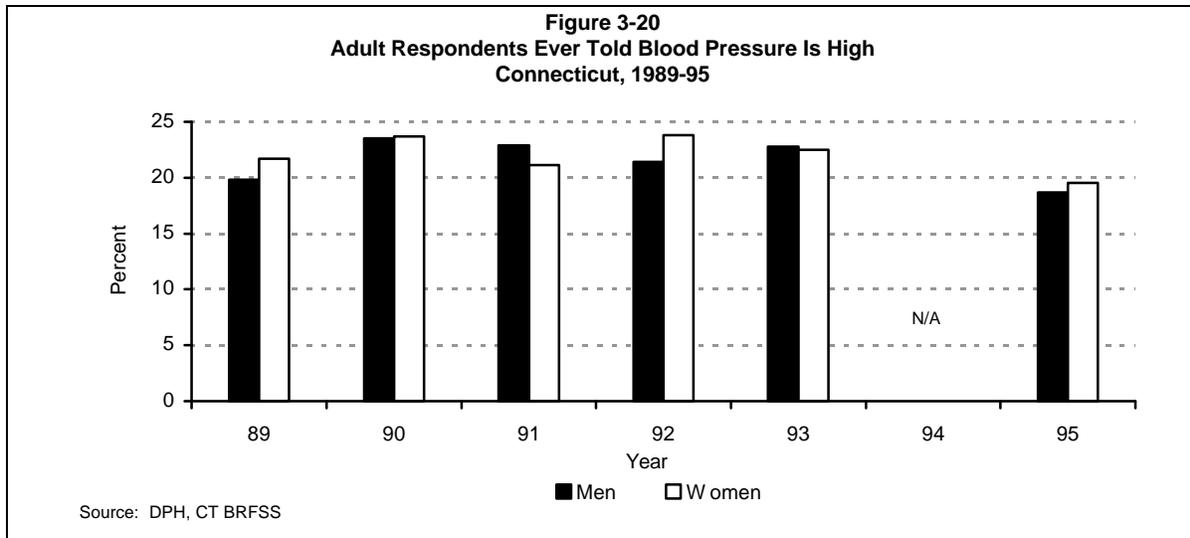
High blood pressure or hypertension is the most important risk factor for stroke and is a major risk factor for heart disease. Because high blood pressure produces no clear symptoms, regular blood pressure measurements are necessary for detection and control. Treatment with medication, behavior modification, or both can often prevent or postpone serious health problems.

## Time Trends

Starting in 1991, BRFSS respondents were asked about how long it had been since they last had their blood pressure taken by a doctor, nurse, or other health professional. They were not asked to state what the blood pressure reading was. In each year, over 94% of respondents reported they had their blood pressure measured by a health professional within the past 2 years (Figure 3-19), thus meeting part of a *Healthy People 2000* objective. In all years, rates were somewhat higher for women than for men, and in 1995 this difference reached statistical significance. Further improvement in blood pressure screening to meet objectives does not appear necessary.



Although not a *Healthy People 2000* objective, hypertension awareness has been measured by the BRFSS in most years. In 1995 nearly 1 in 5 adults (19.1%) had ever been told their blood pressure was high. This rate compares favorably with other states, where the median rate was 22.0% and the range was 18.5% to 29.8%. The rate for men or women did not change much from 1989-1995 (Figure 3-20).



### High Risk Populations

Young males 18-34 years of age and low-income persons may be at high risk for not having their blood pressure screened recently. In terms of hypertension awareness, rates were similar for men and women and were not significantly different between whites and non-whites, but the rate was directly related to age, with 39.7% of the 65 and older respondents reporting they had ever been told their blood pressure was high. Nationally, blacks have a higher incidence and prevalence of hypertension than whites.<sup>36</sup>

### Potential for Intervention

*Healthy People 2000* and *Healthy Connecticut 2000* objectives emphasize screening for and control of hypertension, rather than reducing its prevalence, in keeping with current guidelines that encourage maintaining treatment and control among those already identified. Screening may still be important for certain high-risk populations, such as low-income persons and young males. As high blood pressure is related to other lifestyle risk factors, weight reduction and/or increasing physical activity may offer preventive benefits. These strategies, along with other lifestyle changes, are often recommended in the first stages of treatment, before beginning drug therapy.

### Intervention Strategies

- Promote healthy lifestyles incorporating weight control, physical activity, lower salt intake, non-smoking, and moderate alcohol consumption that reduce the risk of high blood pressure.
- Provide blood pressure screening programs targeting high risk populations.
- Reduce, and remove where possible, any barriers to follow-up services, to help persons with high blood pressure adhere to recommended treatment schedules.

<sup>36</sup> Brownson RC, Remington PL, Davis JR. *Chronic Disease Epidemiology and Control*. Washington, DC: American Public Health Association. 1993:112f.

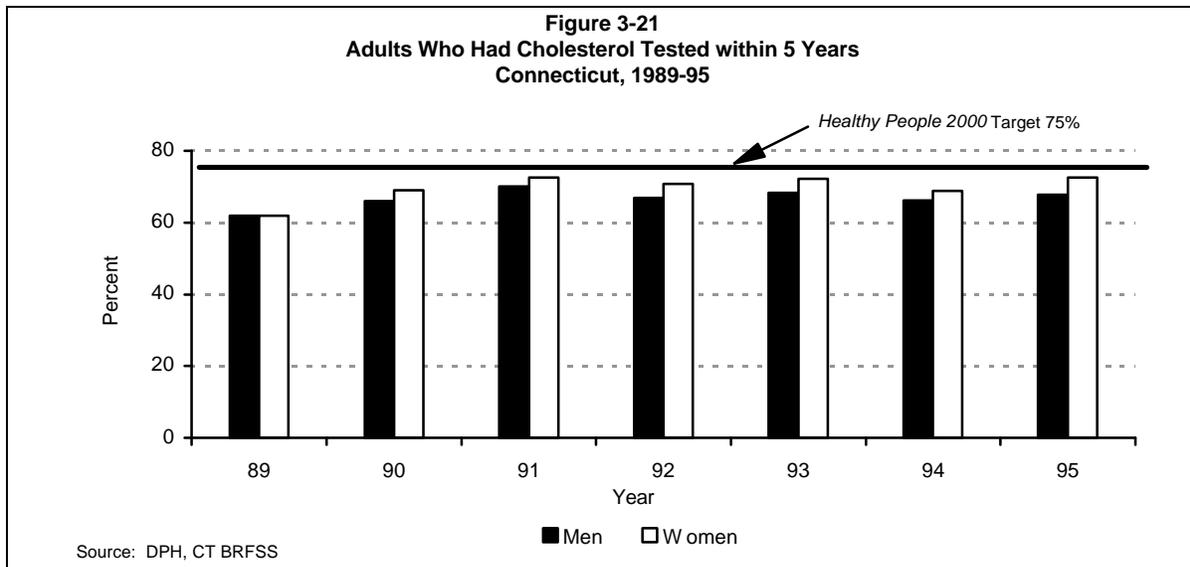
## BLOOD CHOLESTEROL

### Summary

High blood cholesterol is one of the major modifiable risk factors for cardiovascular disease, especially coronary heart disease (CHD). High blood cholesterol may account for as much as 30% of CHD in the United States.<sup>37</sup> A simple blood test can identify those at risk.

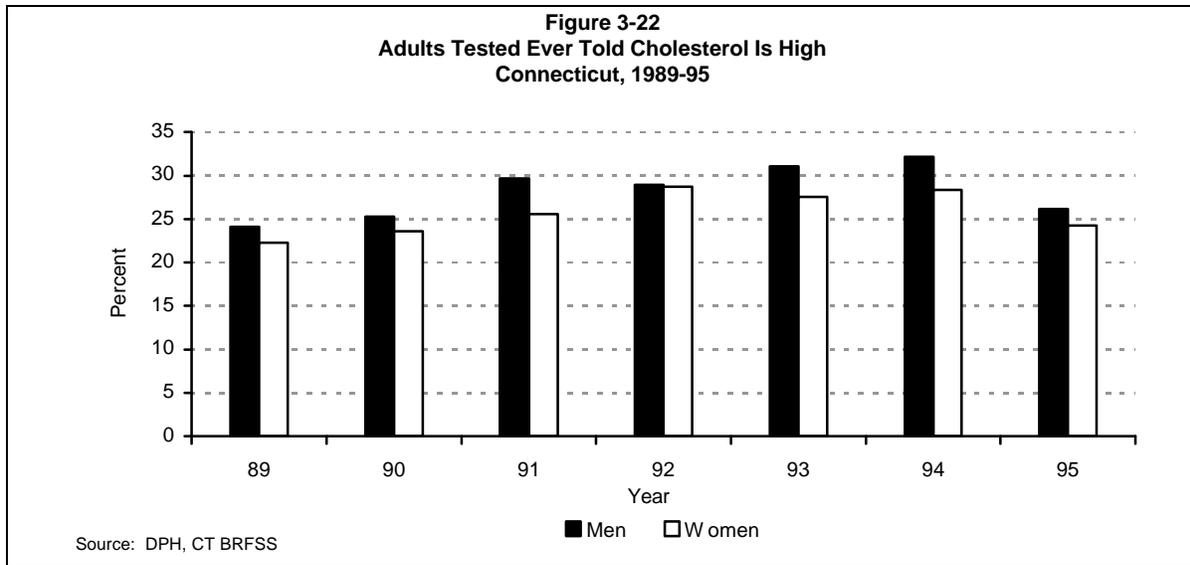
### Time Trends

BRFSS respondents were asked if they ever had their blood cholesterol checked, and if so, how long had it been since it was last checked. About three-fourths of all adults had ever had their cholesterol checked, and in most cases it was within the previous five years. The percent of all respondents who had their cholesterol checked in the past 5 years, which is a *Healthy People 2000* objective, increased from 1989 to 1991 and has subsequently leveled off at about 70% (Figure 3-21).



Respondents who had been tested were asked if they had ever been told their cholesterol was high. In 1995, 25.2% answered “yes.” This represented about 472,000 Connecticut residents. The rate increased slightly between 1989 and 1991 and remained fairly constant through 1995 (Figure 3-22), while rates of screening also remained steady (Figure 3-21).

<sup>37</sup> Brownson RC, Remington PL, Davis JR. *Chronic Disease Epidemiology and Control*. Washington, DC: American Public Health Association. 1993.



### High Risk Populations

Younger persons (especially those 18-24), non-whites, and those with lower incomes were less likely to ever have had their blood cholesterol checked or checked in the past five years. The rate of testing in the past five years in 1995 was 72.2% for whites and only 59.2% for non-whites, a statistically significant difference. Among persons who had been tested, whites and all persons aged 45 and older were more likely than others to have been told their cholesterol was high.

### Potential for Intervention

A diet high in fat, especially saturated fat, is a risk factor for high cholesterol. There are also non-modifiable genetic factors that increase the risk of hyper-cholesterolemia. Body mass index is directly correlated with cholesterol levels, so weight reduction may be beneficial. Physical inactivity and smoking are related to lower levels of HDL--the "good" cholesterol. Recommendations for adults include having a cholesterol screening every five years, reducing dietary fat, especially saturated fat, and maintaining desired weight. Treatment of high cholesterol may also start with dietary changes and move to drug therapy if necessary.

### Intervention Strategies

- Coordinate interventions with other programs that promote physical activity, avoidance of tobacco, and weight control, which all affect cholesterol levels.
- Provide nutrition information at point of purchase, and utilize social marketing to promote the consumption of healthy diets, including low fat items.
- Encourage healthy eating habits at an early age through comprehensive school health education and education of food service staff.
- Encourage adults to have their cholesterol screened at least every five years, and remove any barriers to screening for high risk populations.
- Reduce and remove where possible any barriers to follow-up services, so that persons with borderline-high or high blood cholesterol follow recommendations for treatment.

## DIET AND OVERWEIGHT

### Summary

Poor diet and physical inactivity account for an estimated 300,000 deaths each year in the U.S.<sup>38</sup> The factors related to diet that are represented on the BRFSS include overweight (or obesity) and consumption of fruits and vegetables. Each is related to a *Healthy People 2000* objective. Overweight has been associated with a higher risk of cardiovascular disease, type II diabetes, hypertension, high blood cholesterol, and certain cancers.

One of the *Healthy People 2000* objectives is for 100% of Americans to eat a total of five servings of fruits and vegetables each day. Consumption of fruits and vegetables has been associated with positive health outcomes and reductions in cancer risk, heart disease, and neural tube defects. BRFSS respondents were asked six questions in 1994 that addressed the frequency of consumption of fruit juice, fruits, green salads, potatoes, carrots, and other vegetables. Serving size and actual number of servings were not considered. From their responses, respondents were classified by frequency of consumption. The proportion of adults who consumed fruits and vegetables five or more times a day was 33.5% overall, including 27.9% of men and 38.7% of women. While this is very far from the objective of 100% of adults, the rate for Connecticut was the highest among the 50 BRFSS participants.

Results of a 1995 survey of 12,402 Connecticut students aged 12-18 show that this population group is doing even worse than adults<sup>39</sup>. Over 50% of those surveyed reported not eating any fruit, and 1 in 4 reported not eating any vegetables the previous day.

### Time Trends

Overweight is determined from self-reports of height and weight obtained during the interviews, and is converted into body mass index (BMI: weight in kilograms divided by height in meters squared). BMI's of 27.8 or higher for men and 27.3 for women are considered overweight, and are approximately 20% above desirable body weight.

The proportion of overweight Connecticut adults was less than or equal to the national and state objective of 20% only in 1989 and 1992. In 1995, 24.7% of all adults, 21.9% of women, and 27.8% of men were overweight. In each year from 1989-1995, men were more likely to report being overweight than women; the prevalence rate for men was above the 20% target each year, while women had reached the objective in five of the seven years (Figure 3-23). If men and women are reporting with similar degrees of accuracy, these results suggest that more work is needed to reduce overweight among men to meet the overall objective.

### High Risk Populations

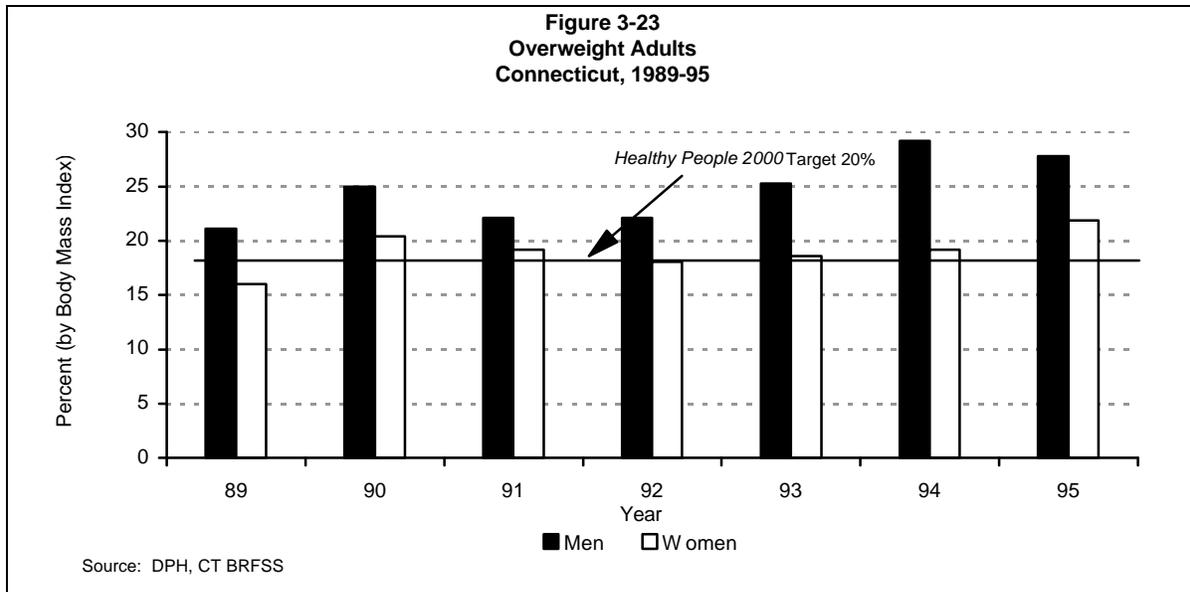
Men, especially non-whites (31.5%) are more likely to be considered obese than others based on BRFSS results. Other demographic groups that appear to be at higher risk for obesity from the BRFSS include blacks (43.4%) and 55-64 year olds of any race (37%). Recent national results where height and weight were actually measured indicate that 33% of men and 36% of women were obese<sup>40</sup>. These and other results based on actual measurements suggest that obesity is under-reported in the BRFSS. Men and youth are high risk subgroups for low fruit and vegetable consumption.

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<sup>38</sup> McGinnis JM, Foegen WH. 1993.

<sup>39</sup> Beuhring T, Saewyc EM, Billian Stern C, and Resnick MD. "Voice of Connecticut Youth Survey".

<sup>40</sup> "Update: Prevalence of Overweight Among Children, Adolescents and Adults - United States", 1988-1994. Morbidity and Mortality Weekly Report 46: 199-202, 1997.



### Potential for Intervention

Early interventions using a realistic behavioral approach to calorie control, in combination with increasing physical activity, may be effective in reducing obesity. Increasing public and professional awareness about prevention and the consequences of obesity are key. Voluntary weight loss is a popular activity, and results from the BRFSS indicated that 36% of all respondents and 63% of overweight respondents were trying to lose weight in 1994. In spite of this, obesity remains a considerable problem, suggesting that commonly used strategies are not always successful. Because dietary and exercise habits are frequently established at an early age, interventions should be designed to target the young and even preschoolers.

### Intervention Strategies:

- Develop programs at the state and community level to educate the public about the importance of healthy diets that are low in fat and contain at least five servings a day of fruits and vegetables.
- Provide nutrition information at point of purchase, and utilize social marketing to promote the consumption of healthy diets including low fat items and fruits and vegetables.
- Promote increased physical activity along with reduced caloric intake as a more effective method to lose weight than either technique alone.
- Encourage primary care physicians to determine the body mass index of their patients and to counsel overweight patients to lose weight.
- Encourage healthy eating habits at an early age through the use of comprehensive health education and education of food service staff.

## SUMMARY

The results of the 1995 Behavioral Risk Factor Surveillance Survey for the health-related behaviors discussed above are summarized in Table 3-10. The findings are presented for both sexes combined as well as separately, and with reference to *Healthy People 2000* objectives and progress made since 1990.

**Table 3-10**  
**Prevalence of Health-related Behaviors by Sex for Adults Aged 18+**  
**Connecticut, 1995**

Characteristic	Sex			Healthy People 2000 Objective	Objective Achieved?	Improved since 1990?
	Male	Female	Both Sexes			
Current smoking <sup>a</sup>	21.0%	20.6%	20.8%	15%	No	Yes
Chronic drinking <sup>b</sup>	7.4%	1.7%	4.4%	-	-	?
Binge drinking <sup>c</sup>	23.0%	6.6%	14.4%	-	-	Yes
Drinking & driving <sup>d</sup>	4.5%	0.6%	2.5%	-	-	?
No exercise <sup>e</sup>	17.0%	26.4%	21.9%	15%	No	Yes
Regular exercise <sup>f</sup>	30.3%	23.9%	26.9%	30%	Yes (Men)	Yes
Blood pressure checked <sup>g</sup>	92.4%	96.8%	94.7%	90%	Yes	Unchanged
Told blood pressure high <sup>h</sup>	18.7%	19.5%	19.1%	-	-	?
Cholesterol screened <sup>i</sup>	67.7%	72.5%	70.2%	75%	No	Unchanged
Told cholesterol high <sup>j</sup>	26.2%	24.3%	25.2%	-	-	-
Overweight <sup>k</sup>	27.8%	21.9%	24.7%	20%	No	No
Fruit/veg. Consumption <sup>l</sup>	27.9%	38.7%	33.5%	100%	No	N/A

<sup>a</sup> Respondents who report ever smoking 100 cigarettes and who smoke now (regularly or irregularly).

<sup>b</sup> Percent of adults who reported drinking 60 or more drinks in past month.

<sup>c</sup> Percent of adults who consumed five or more drinks on one occasion in the past month.

<sup>d</sup> Percent of all adults who reported having driven after having perhaps too much to drink in the past month.

<sup>e</sup> Percent who engage in no leisure time physical activity (1994 data).

<sup>f</sup> Percent who exercise 5 times per week for 30 minutes at a time (1994 data).

<sup>g</sup> Percent who had blood pressure checked within 2 years.

<sup>h</sup> Percent of all respondents who have been told their blood pressure was high.

<sup>i</sup> Percent who had blood cholesterol checked within the past 5 years.

<sup>j</sup> Percent of those who had cholesterol checked who were told it was elevated.

<sup>k</sup> Overweight: females with body mass index (BMI - weight in kilograms divided by height in meters squared) equal to or more than 27.3, and males with BMI equal to or greater than 27.8.

<sup>l</sup> Percent of all adults who consume five or more servings of fruits and vegetables per day.

? Either trend is not evident or meaning of any trend is not clear.

Source: DPH, Behavioral Risk Factor Surveillance System analysis, 1995.

# CHRONIC DISEASES

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Chronic diseases have been referred to as chronic illnesses, non-communicable diseases, and degenerative diseases. They are generally characterized by multiple risk factors, a long latency period, a prolonged course of illness, non-contagious origin, functional impairment or disability, and low curability. Although the causes of many chronic diseases remain obscure, epidemiologists have identified specific risk factors that are associated with many of the leading chronic diseases. Control of a single factor, such as cigarette smoking, for example, can reduce the risk of many chronic diseases. The goals of chronic disease control are to reduce the incidence of diseases, delay the onset of disability, alleviate the severity of the diseases, and prolong the individual's life.

## HIGHLIGHTS

- Cardiovascular diseases is the leading cause of death in Connecticut, the U.S., and the world, although declines in death rates for some categories continue.
- About 90% of lung cancers may be preventable through abstinence from use of tobacco, but additional efforts are needed in smoking prevention and cessation.
- Lung cancer incidence rates continue to increase among Connecticut women, and are higher for women than men less than 45 years old.
- Breast cancer is the most common cancer diagnosed among Connecticut women, and is the second leading cause of cancer death; some such deaths could be prevented by increasing the proportion of women screened regularly, including uninsured and underinsured women.
- Incidence rates of invasive cervical cancer among all women declined between 1980 and 1994. Crude incidence rates continue to be higher for black women than white women.
- An estimated 5.1% of Connecticut adults aged 18 and over have diagnosed diabetes; the same proportion may be undiagnosed.
- Seventy percent of socioeconomically disadvantaged children aged 6-8 years have untreated dental disease.

## CARDIOVASCULAR DISEASE

### Summary

Cardiovascular disease (CVD) is not a single disease, but a category of disorders affecting the heart and blood vessels. Coronary heart disease, cerebrovascular disease (stroke), atherosclerosis, congenital heart disease, and hypertension all are forms of cardiovascular disease. Among men and women and across all racial and ethnic groups, cardiovascular disease is the world's, our nation's and the state's leading killer. More than 950,000 Americans die of cardiovascular disease each year, accounting for more than 40% of all deaths.<sup>41</sup>

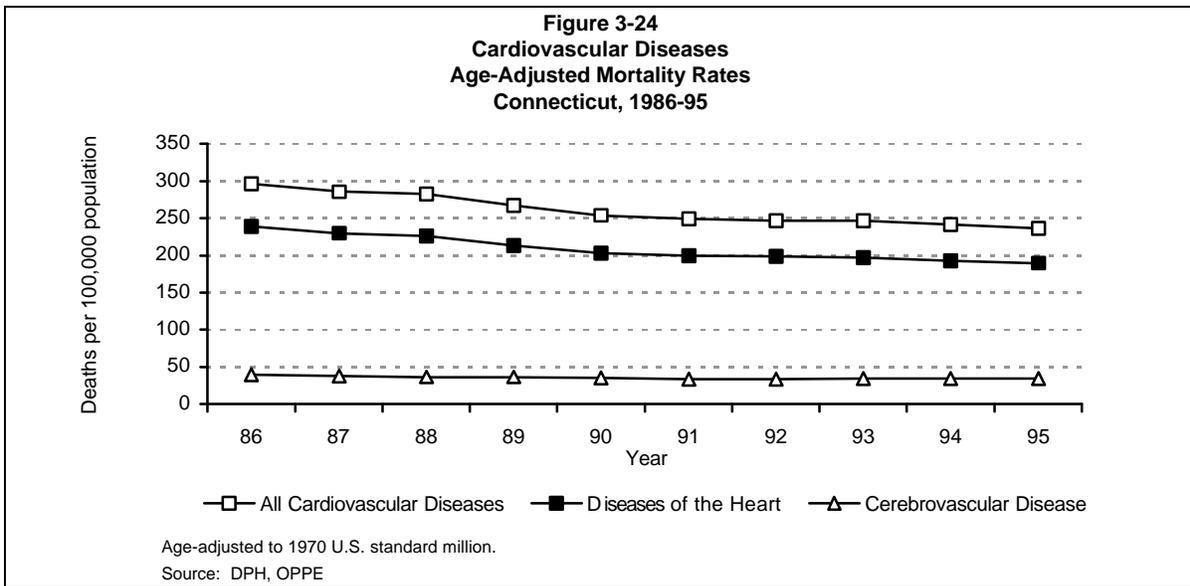
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<sup>41</sup> U. S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention. *Preventing Cardiovascular Disease: Addressing the Nation's Leading Killer At-A-Glance*. Hyattsville, MD: DHHS. 1997.

CVD mortality is only part of the burden of CVD. About 57 million Americans (almost 25% of the U.S. population) live with some form of CVD.<sup>42</sup> More than 9 million Americans aged 65 or older report disabilities caused by heart disease. Stroke is also a leading cause of disability in the U.S., affecting 500,000 people each year.

### Time Trends

In 1994 in Connecticut, CVD contributed to more than 12,000 deaths (44% of all deaths) and more than 2,000 deaths (32%) to those under 65 years of age.<sup>43</sup> Death rates for cardiovascular disease and its two major sub-categories, diseases of the heart and cerebrovascular disease, have declined steadily since 1986 (Figure 3-24).



### Economic Aspects

Both the human and economic costs of cardiovascular disease are very high. Almost 6 million hospitalizations each year are due to CVD.<sup>44</sup> The cost of CVD in the U.S. includes health expenditures as well as lost productivity. In 1994, the estimated direct (medical care) and indirect (lost productivity) cost of cardiovascular disease in Connecticut was \$1.1 billion. This is approximately \$500 per person in the state.<sup>45</sup>

The economic burden of CVD has an enormous impact on the U.S. health care system, and this burden continues to grow as the population ages. Treatment, while effective in delaying death, is likely to continue to increase the financial impact.

### High Risk Subgroups

Although CVD is often regarded even by physicians as affecting primarily men and older people, it is also a major killer of women and is the leading cause of death among middle-aged Americans. For diseases

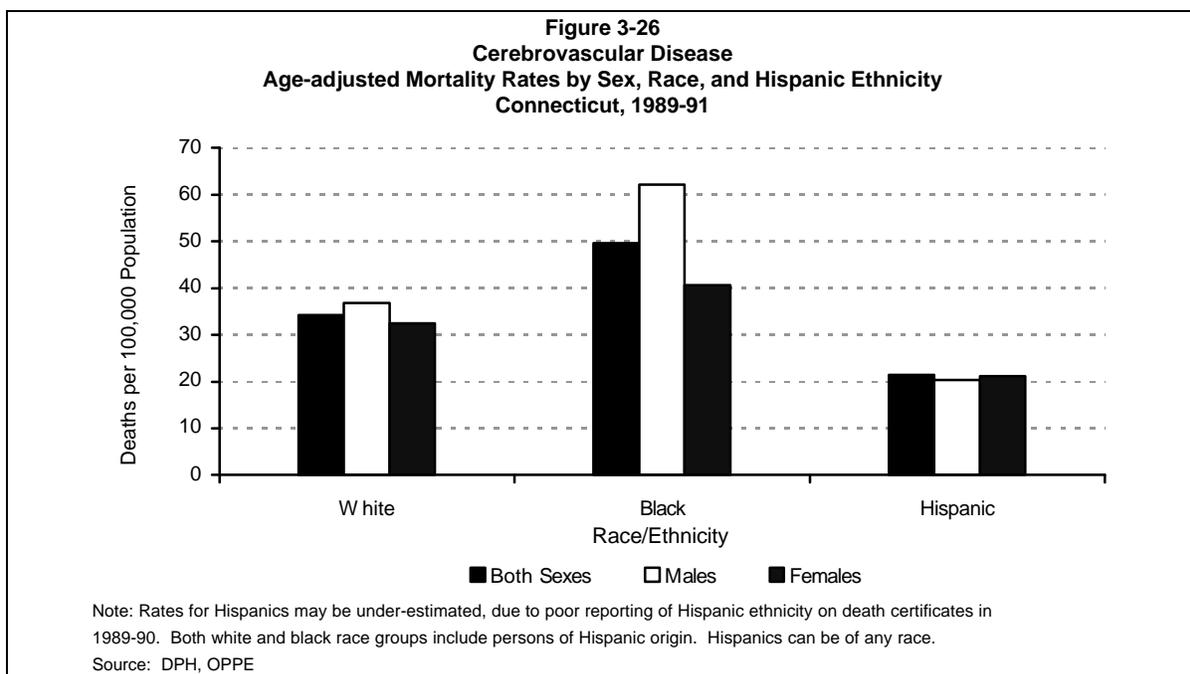
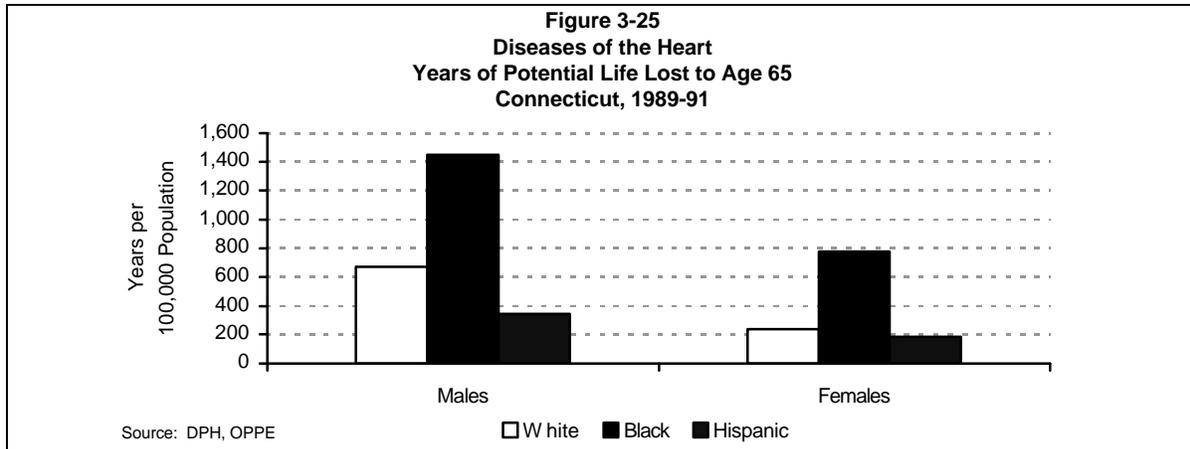
<sup>42</sup> U. S. Department of Health and Human Services, Public Health Service.

<sup>43</sup> U. S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, National Center for Health Statistics. 1994.

<sup>44</sup> U. S. Department of Health and Human Services.

<sup>45</sup> U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention. *State Cardiovascular Disease Highlights, 1997. The Burden of Cardiovascular Disease in the United States.* Hyattsville, MD: DHHS. 1997.

of the heart, rates of premature mortality (deaths before age 65) for black males and females were more than twice the comparable figures for whites<sup>46</sup> and Hispanics from 1989 to 1991 (Figure 3-25). Cerebrovascular disease death rates were highest for black persons, especially black males (62.1 per 100,000 population); rates for whites and Hispanics were considerably lower.



### Modifiable Risk Factors and Potential for Intervention

CVD deaths are considered to be premature and preventable by modifying lifestyle. In Connecticut, over half of all heart disease deaths and over two-thirds of all stroke deaths are attributed to four CVD risk factors--smoking, physical inactivity, hypertension, and overweight-- and thus are potentially preventable.

<sup>46</sup> U. S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention. *Preventing Cardiovascular Disease: Addressing the Nation's Leading Killer At-A-Glance.*

The major modifiable risk factors for CVD are smoking, high blood pressure, elevated blood cholesterol, diet, obesity, physical inactivity and diabetes (Please see section on Behavioral Risk Factor prevalence).

The presence of more than one risk factor increases the risk of coronary heart disease, diseases of the heart, and cerebrovascular disease. A person with two major risk factors has a risk of heart disease or stroke six times as great as a person with no risk factors.<sup>47</sup> With three factors, the risk of cardiovascular disease is 20 times as great. Approximately 80% of adults in Connecticut reported having at least one of these factors, and 43% reported two or more.<sup>48</sup> In 1994, in Connecticut, adult prevalences of major risk factors for cardiovascular disease were higher than the year 2000 national health objectives; 20% of Connecticut adults used tobacco and 22% did not exercise, whereas the national health objectives are 15% for each risk factor. One quarter of Connecticut residents were overweight, compared to the national health objective of 20%.

People with risk factors for CVD need to be identified, made aware of the situation, and provided with tools to make changes in their behaviors. Interventions to reduce risk factors could include the community based programs shown in Table 3-11. Current interventions target the major risk factors and provide programs promoting behavioral changes. Professional education is also a component of initiatives to address CVD. The DPH CVD program staff provide technical assistance to, and oversight of, more than 30 local health departments and other community agency contractors who receive funding to target each of the CVD risk factors in their residents through the implementation of program strategies.

**Table 3-11  
CVD Risk Factors and Intervention Strategies**

CVD Risk Factors	Strategies/Objectives
Elevated Cholesterol Levels	Cholesterol screening/referral, education and counseling aimed at assisting clients to take action to reduce elevated cholesterol.
Diabetes	Multi-session self-care education programs on reducing risk for cardiovascular disease and other diabetes-related complications including: peripheral vascular disease, neuropathy, end-stage renal disease, and blindness.
Physical Inactivity	Multi-session physical activity programs to help individuals introduce at least a moderate level of physical activity into their lifestyles.
Nutrition/Excess Dietary Fat	Multi-session education programs that provide information and practical skills necessary to establish healthy eating patterns, including the reduction of excess dietary fat.
High Blood Pressure	High blood pressure screening, referral, education and counseling programs necessary to initiate action to control high blood pressure.
Smoking	Individual counseling and group multi-session cessation and prevention programs to motivate and assist smokers in ceasing or reducing tobacco intake. Promote protective environmental changes to decrease exposure of infants and children to ETS.
Education/Training	Education and training programs for health care professionals to enhance program effectiveness and increase professional awareness of modifiable risk factors.
Media Campaigns	Media campaigns to improve public awareness of risk factors and how to reduce them.

## CANCER

### Overview

Cancer ranks higher than heart disease (a sub-category of cardiovascular diseases) in terms of age-adjusted death rates to persons under age 65 and age-adjusted YPLL under age 65 in the U.S. and Connecticut. The temporal decline in death rates for heart disease under age 65 has been greater than that for cancers.

This section focuses on cancers of the lung, breast, and uterine cervix, along with melanomas of the skin. These types of cancer were selected on the basis of high incidence rates (lung and breast), knowledge of

<sup>47</sup> Connecticut Department of Public Health. *Behavioral Risk Factor Surveillance System*. 1995.

<sup>48</sup> Connecticut Department of Public Health.

major causal factors (i.e., smoking for lung cancer, and excessive sun exposure for melanoma) and availability of effective screening tests that can detect cancers at an early stage (breast and cervix). Because early detection could prevent a portion of breast and cervical cancer mortality, screening utilization among Connecticut women is an important public health indicator. Invasive cervical cancer is much less commonly diagnosed than breast cancer, but it is more preventable (in terms of morbidity and mortality) through screening.

Colon cancer is the third most commonly diagnosed cancer in Connecticut but detection and treatment of early-stage cancers reduces mortality. Recently reported evidence supports screening for colorectal cancer among persons 50 years of age and older. The U.S. Preventive Health Services Task Force recommends screening by fecal occult-blood testing annually or with sigmoidoscopy periodically.<sup>49</sup> Prostate cancer is the most commonly diagnosed cancer among men but the Task Force does not recommend routine screening with digital rectal examination, prostate-specific antigen or transrectal ultrasound. However the American Cancer Society does recommended that all men be screened for prostate cancer.

## Lung Cancer

### *Incidence and Mortality*

Lung cancer is the most common cause of cancer death in both men and women in the U.S. and Connecticut. Incidence and mortality rates declined among males from 1980 to 1994, but increased among Connecticut women. Another criterion of public health importance is premature mortality, or years of potential life lost (YPLL) before age 65. For lung cancer, the YPLL in 1994 was 140.0 per 100,000 population<sup>50</sup> (151.6 in males, 130.8 in females). These rates were the highest among all cancers in Connecticut. Changes in standardized incidence rates are shown in Figure 3-27. Crude incidence rates from 1990-1994 by sex and race are given in Table 3-12.

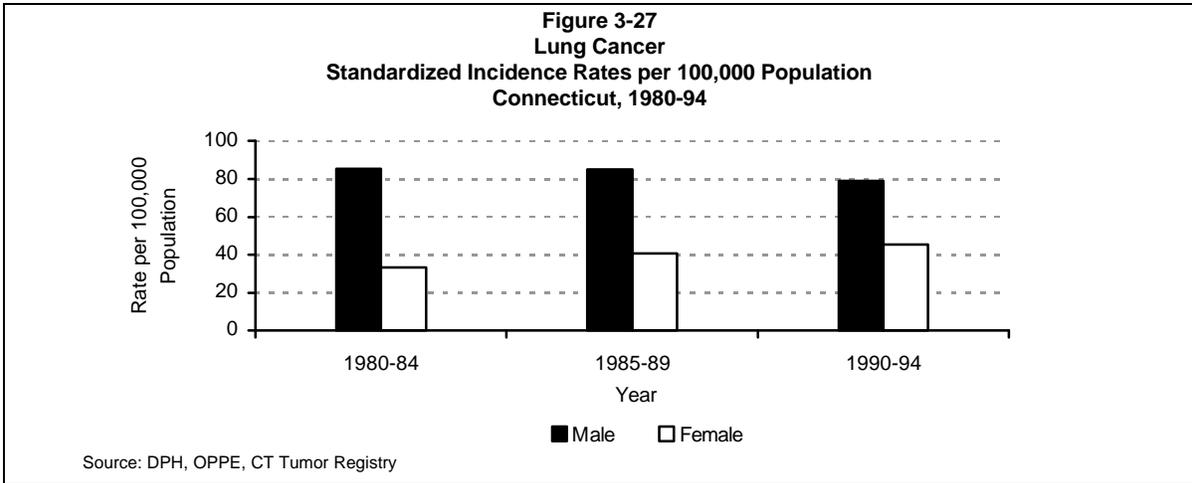
**Table 3-12**  
**Lung Cancer Incidence Rate by Sex and Race**  
**Connecticut, 1990-94**

	Males		Females	
	Black	White	Black	White
Number	428	6,177	238	4,652
Rate per 100,000 population	62.1	87.0	31.4	61.7

Source: DPH, OPPE, CT Tumor Registry

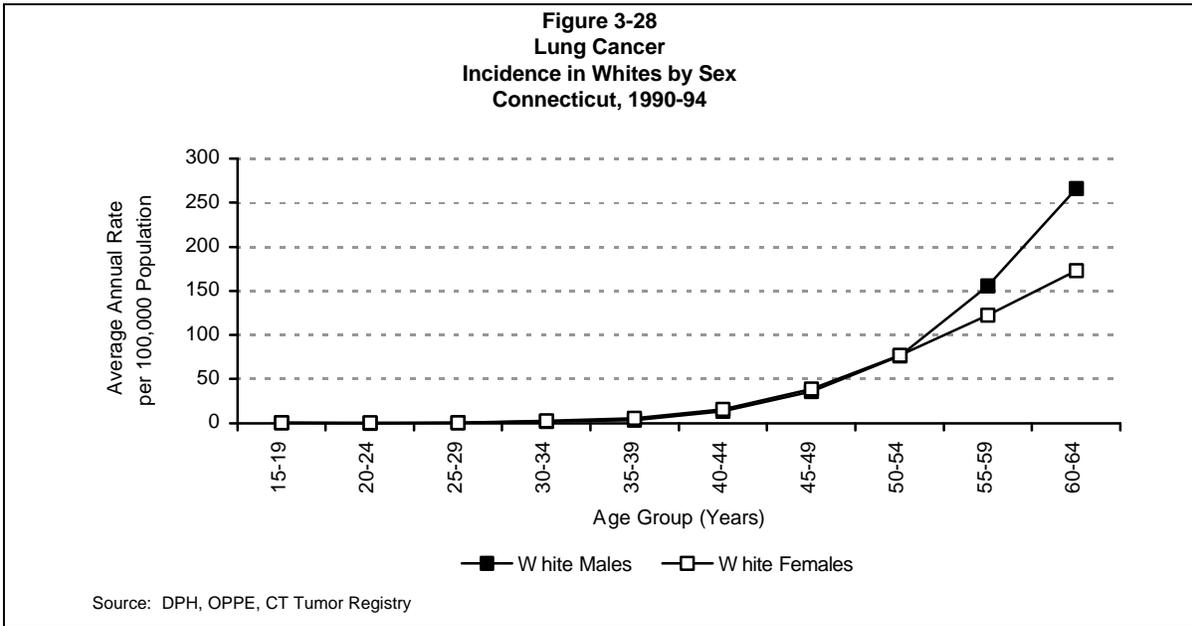
<sup>49</sup> U.S. Department of Health and Human Services, Public Health Service, Office of Disease Prevention and Health Promotion, U.S. Preventive Health Services Task Force. *Guide to Clinical Preventive Services*, 2nd Edition. Washington DC: DHHS. 1996 February.

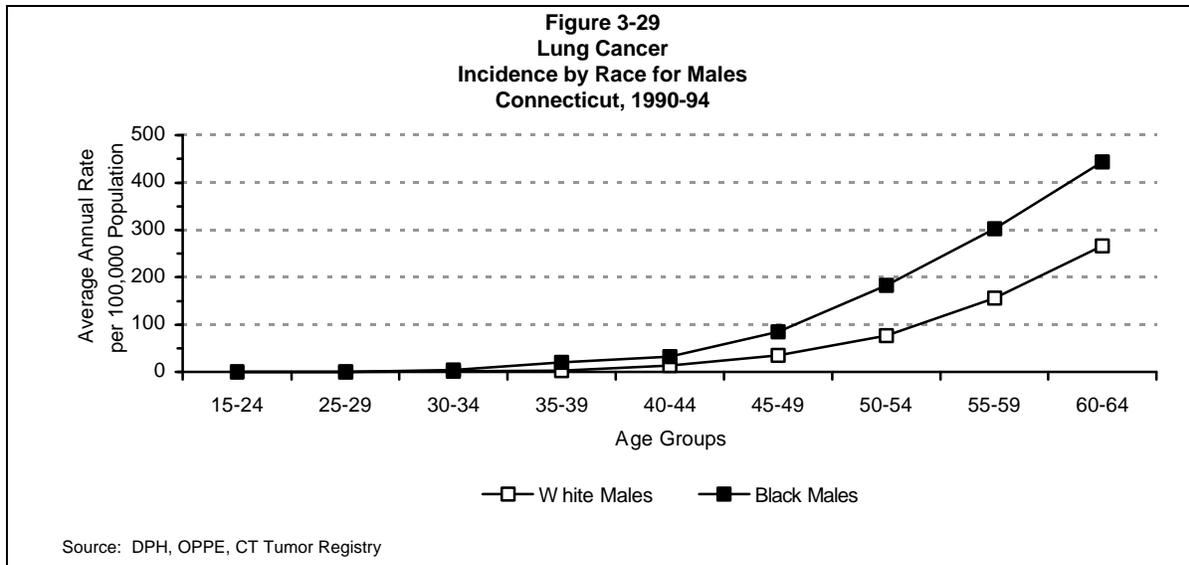
<sup>50</sup> Age-adjusted to the 1940 U.S. standard million population.



Age-specific average annual incidence rates in 1990-94 were higher for women than men from ages 30-34 through 40-44, with equal rates at age 45-49; only for ages 50-54 and older did rates for men exceed those for women. The age-specific rates are shown in Figure 3-28 for white males and females. Age-specific incidence rates were higher for black males than white males, including ages <65 years (Figure 3-29). Such racial differences were much smaller, however, among women.

Racial and ethnic differences in lung cancer incidence and mortality persist, especially among males. While lung cancer incidence and mortality rates among Hispanics have been low, increases are expected as their smoking rates increase.





### Geographic Variation

The numbers of incident lung cancers diagnosed from 1990-94 among residents of several Connecticut towns were higher than expected on the basis of statewide incidence rates. There were clusters of lung cancers in males in towns in the Hartford and New Haven areas (Table 3-13). The distribution of male lung cancer cases by town is illustrated in Map 3-11. The number of female cancers were smaller than for males, but rates were relatively high in the towns of Branford, Milford and West Haven, and the counties of New Haven and New London (Table 3-14).

**Table 3-13  
Lung Cancer in Males  
Connecticut, 1990-94**

Towns with Significantly Elevated Standardized Incidence Ratios (SIRs) <sup>a</sup>	Number of Cancers		SIR
	Observed	Expected	
Bristol	145	119.4	1.21
Derby	41	29.3	1.40
E. Hartford	146	114.8	1.27
Hartford (cluster includes Hartford, E. Hartford, Bristol, Plainville)	230	196.4	1.17
New Haven <sup>c</sup>	284	200.9	1.41
Plainville	54	35.9	1.51
Shelton (cluster includes Derby and New Haven)	90	68.3	1.32
Stratford	166	132.9	1.25

<sup>a</sup> Standardized incidence ratio is the ratio of observed to expected numbers.

Source: DPH, OPPE, CT Tumor Registry

**Table 3-14**  
**Number of Lung Cancers and Standardized Incidence Ratio (SIRs) by Sex and County**  
**Connecticut, 1990-1994**

County	Number of Cancers				SIR	
	Observed		Expected		Males	Females
	Males	Females	Males	Females		
Fairfield	1,592	1,197	1,664.3	1,249.1	0.96	0.96
Hartford	1,767	1,218	1,727.3	1,297.0	1.02	0.94
Litchfield	332	238	365.6	260.6	0.91	0.91
Middlesex	294	226	275.4	204.5	1.07	1.11
New Haven	1,792	1,387	1,639.7	1,252.5	1.09	1.11
New London	472	372	460.3	336.4	1.03	1.11
Tolland	176	136	196.0	136.0	0.90	1.00
Windham	202	128	183.8	138.6	1.10	0.92

Source: DPH, OPPE, CT Tumor Registry

### *Modifiable Risk Factors and Potential for Intervention*

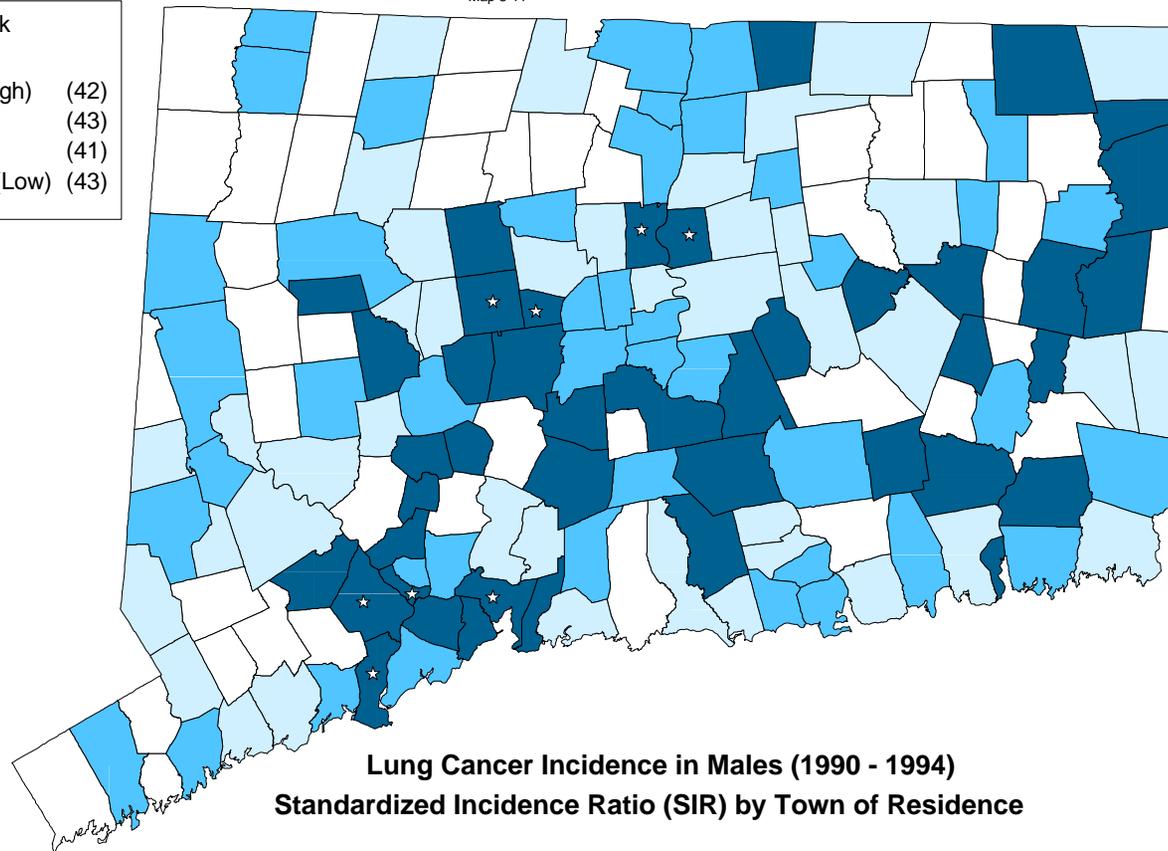
About 90% of lung cancers may be preventable through abstinence from tobacco; the remaining 10% are related to occupational exposures to asbestos and certain other chemicals. There is an enormous potential for public health efforts to reduce the burden of morbidity and mortality from lung cancer, through effective smoking prevention and cessation programs. Such programs could include special efforts in geographic areas with relatively high lung cancer incidence and mortality rates. The long average time interval between initiation of smoking and diagnosis of lung cancer means that the results of smoking prevention efforts will take many years to appear, but smoking prevention in adolescents is crucial to reducing the future burden of lung cancer and other smoking-related diseases in the population.

### Breast Cancer

#### *Incidence and Mortality*

Among women in Connecticut, breast cancer is the most common cancer diagnosed and the second leading cause of cancer death. The Connecticut death rate has been below the year 2000 target of 23.1 per 100,000 population for several years (Figure 3-30). However, a proportion of late-stage cancers and deaths are preventable through annual high-quality screening, and expansion of screening (especially for lower-income and uninsured women) would further reduce the mortality rate. Screening for breast cancer by mammography and clinical breast examination is recognized as being important in reducing the mortality rate from breast cancer, through detection at an earlier stage.

Map 3-11



☆ Significantly elevated ( $p < 0.05$ ) SIR based on statewide rates  
Source: DPH, OPPE, Tumor Registry, 1997

### *High Risk Groups*

Breast cancer is one of only a few cancer sites which is associated with higher social class. For all cancers combined, and most cancer sites (such as lung, stomach and cervix) incidence rates are higher among the lower social classes. The higher breast cancer incidence rates among higher social classes are due in part to reproductive history; that is, larger numbers of pregnancies and earlier age at first pregnancy are protective against breast cancer and tend to be less common in higher social classes. Social class differences are also involved in black-white breast cancer differences, although postmenopausal rates may be higher in whites than blacks even within social class groups.<sup>51</sup>

### *Screening and Stage at Diagnosis*

The distribution of stage at diagnosis (Table 3-15) is a “process” indicator of progress toward earlier detection of breast cancer, whereas the breast cancer mortality rate is a long term indicator of progress in breast cancer control. There are no specific *Healthy Connecticut 2000* objectives for stage at diagnosis. However, breast cancer mortality and breast cancer screening objectives are relevant, because screening can detect cancers at an early stage, for which survival rates are highest. *Healthy People 2000* targets for breast cancer screening and baseline data from the National Health Interview Survey (NHIS) are shown in Table 3-16.

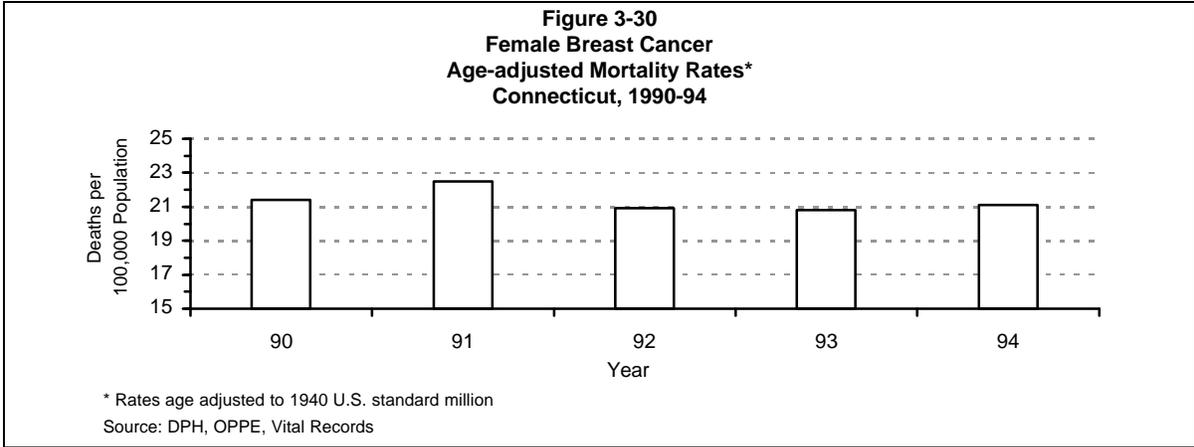
The NHIS does not provide state-specific data. However, data from the Behavioral Risk Factor Surveillance Survey show that the minimum objective of 60% of Connecticut women with a mammogram and clinical breast exam in the past two years was reached in 1990-94. BRFSS data overestimate screening rates, however, and do not assess regular annual screening.

There is ample support for targeting older women in screening programs. First, screening rates tend to decline with age. Second, the risk of invasive breast cancer increases with age (Figure 3-31). Screening increases the chance that breast cancer will be detected at an early stage (e.g., *in situ* or local). Breast cancer survival rates are five times higher for cancers diagnosed at the *in situ* or local stage, compared to the regional and distant (metastatic) stages. The in-hospital costs are lower for early than late stage breast cancer patients in Connecticut<sup>52</sup>. However, screening and follow-up of abnormal screening tests for women who will never be diagnosed with breast cancer during their lifetime produces a cost that far outweighs the savings resulting from earlier diagnosis of cancers that are detected. That is, screening is costly, and society must weight the costs and benefits of different medical interventions, based on economic analyses using such criteria as cost per year of life saved. Nearly one-third of Connecticut breast cancers are still being detected at regional and distant stages, after some metastasis has occurred.

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<sup>51</sup> Baquet CR, Horm JW, Gibbs T et al. Socioeconomic factors and cancer incidence among blacks and whites. *Journal of the National Cancer Institute*. 1991;83:551-557.

<sup>52</sup> Polednak AP, Shevchenko I, Flannery JT. Estimating breast cancer treatment charges in Connecticut. *Connecticut Medicine* 1996;60:263.



**Table 3-15**  
**Female Breast Cancer**  
**Stage at Diagnosis of Incident by Race**  
**Connecticut, 1990-94 and U.S., 1986-91**

Race	Stage (%)				
	In situ	Local	Regional	Distant	Unknown
<b>Connecticut</b>					
Black	12.7	46.6	33.5	4.4	2.8
White	12.6	57.0	23.0	4.5	3.0
All races	12.6	56.4	23.6	4.5	3.0
<b>National<sup>a</sup></b>					
1986-91 Total	-	58	32	6	3
Black	-	48	38	9	5
White	-	59	32	6	3

Source: National Cancer Institute, Surveillance, Epidemiology and End Results (SEER) Program.

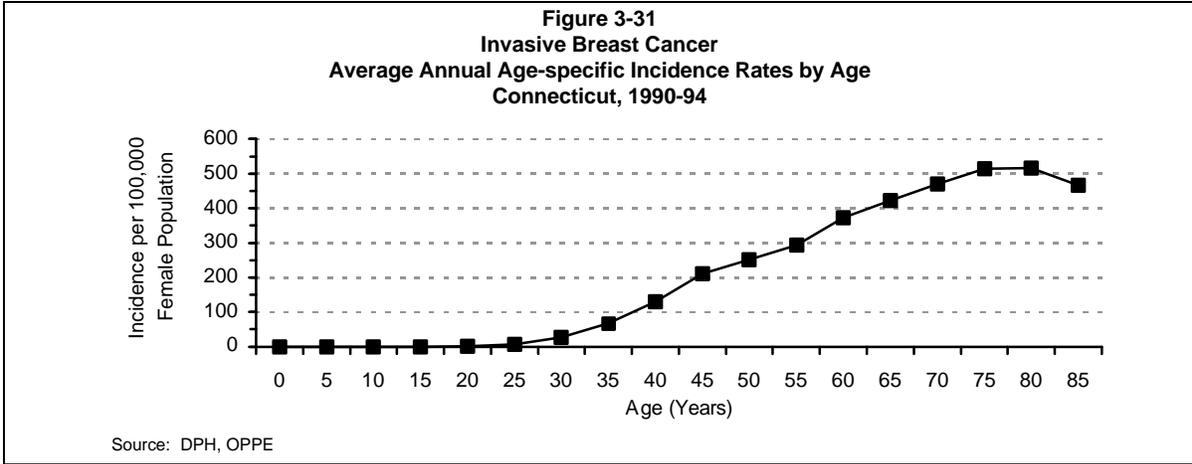
<sup>a</sup> From SEER registries only. There are no national data. SEER data are used by National Cancer Institutes as national data; the latest data published are for 1986-91. SEER reports do not include *in situ* breast cancer.

**Table 3-16**  
**Clinical Breast Exam and Mammogram Received within Preceding 2 Years**  
**United States, 1992**

Group	1987 Baseline	1992 Status <sup>a</sup>	Year 2000 Target
All women aged 50+	25%	51%	60%
Black women	19%	Estimate not reliable	60%
Hispanic women	18%	44%	60%
Annual family income <\$10,000	15%	30%	60%
Less than high school education	16%	28%	60%
Women aged 70+	18%	26%	60%

Source: CDC, National Center for Health Statistics, National Health Interview Survey

<sup>a</sup> Data available only for "within preceding 3 years."



High incidence rates for invasive breast cancer have been noted for Fairfield County (which includes affluent areas) and for several towns statewide that also have relatively high proportions of persons with higher incomes (Table 3-17, Table 3-18). These towns could be targeted for special efforts in primary prevention.

**Table 3-17**  
**Invasive Breast Cancer by Towns with Elevated SIRs<sup>a</sup>**  
**Connecticut, 1990-94**

Town	Number of Cancers		SIR
	Observed	Expected	
Bloomfield	126	98.0	1.29
Wethersfield	176	141.5	1.24
Southbury	121	94.0	1.29
Groton	146	115.3	1.27
Guilford	94	70.7	1.33
Easton	37	25.1	1.47
Weston	43	30.3	1.42
Westport	150	106.1	1.41

<sup>a</sup> Standardized Incidence Ratios. Only towns with more than 20 cancers are shown.  
Source: DPH, OPPE, CT Tumor Registry

**Table 3-18**  
**Number of Breast Cancers and SIR by County of Residence**  
**Connecticut, 1990-94**

County	Number of Cancers		SIR
	Observed	Expected	
Fairfield	3,395	3,210.1	1.06
Hartford	3,274	3,280.0	1.00
Litchfield	644	665.0	0.97
Middlesex	518	528.8	0.98
New Haven	3,201	3,129.6	1.02
New London	892	858.5	1.04
Tolland	365	368.7	0.99
Windham	311	364.5	0.85

Source: DPH, OPPE, CT Tumor Registry

*Modifiable Risk Factors and Potential for Intervention*

The scope of primary prevention of breast cancer is limited at present, but the risk of breast cancer may be modified by changes in diet, such as lower fat intake, especially in early life, higher intake of fruits and vegetables, greater physical activity, reduction in body weight, and reduction in alcohol intake. Some women

may be genetically susceptible to the effects of cigarette smoking as a cause of breast cancer, and this could give greater impetus to the need for smoking prevention and cessation programs targeted to females.

The DPH houses the Connecticut Breast and Cervical Cancer Early Detection Program, part of a national program run by the CDC. The program provides statewide public and professional education, community outreach, direct breast and cervical cancer screening and diagnostic services, and case management (tracking and clinical follow-up) to low-income, underinsured and uninsured women age 40 and older. CDC mandates that 80% of women screened through the program be at least 50 years old. The national program has already been shown to be effective in detecting breast cancers at earlier stages over time.

## Melanoma of the Skin

### *Incidence and Regional Variation*

Age-standardized incidence rates for melanoma have increased for both males and females in Connecticut (Table 3-19). Marked regional variation has been observed among Connecticut towns, with higher standardized incidence ratios in certain ocean shoreline towns; consequently, rates for Fairfield and New London counties are higher than for other state counties (Table 3-20). Such geographic patterns are believed to be related, at least in part, to differences in recreational sun exposure, but epidemiological studies are needed. Map 3-12 illustrates the Connecticut SIRs by town of residence.

**Table 3-19**  
**Time Trends in Age-standardized Incidence Rates for Melanoma of the Skin**  
**Connecticut, 1980-94**

Years	Incidence per 100,000 Population	
	Males	Females
1980-84	11.3	8.9
1985-89	14.1	10.7
1990-94	18.2	12.5

Source: DPH, OPPE. CT Tumor Registry

### *Modifiable Risk Factors and Potential for Intervention*

There is no year 2000 objective for melanoma of the skin; however, it is a growing public health problem, and many cases may be prevented by modifying behavior starting in childhood. Interventions to reduce risk factors for skin cancer are outlined below.

- Educating parents and caregivers of children about the risks of skin cancer associated with excessive sun exposure during childhood.
- Developing educational messages for the public, emphasizing the need to avoid sun exposure during certain times of the day, and to wear protective clothing. Special efforts may be needed for residents of ocean shoreline areas and all Connecticut residents who use shoreline and lake beaches for sunbathing.
- Skin cancer screening by dermatologists may result in detection of undiagnosed melanomas and other skin cancers.

**Table 3-20**  
**Number of Melanoma of the Skin Cancers by County of Residence**  
**Connecticut, 1990-94**

County	Number of Cancers		SIR
	Observed	Expected	
Fairfield	843	744.8	1.13
Hartford	696	757.5	0.92
Litchfield	160	156.9	1.02
Middlesex	115	124.5	0.92
New Haven	703	714.0	0.98
New London	262	206.5	1.27
Tolland	109	95.2	1.14
Windham	47	87.3	0.54

Source: DPH, OPPE, CT Tumor Registry

## Invasive Cervical Cancer

### *Incidence, Mortality, and High Risk Groups*

Incidence rates for invasive cervical cancer in Connecticut declined from 1980-94 (Table 3-21). In 1994, the Connecticut age-standardized death rate for invasive cervical cancer was 2.1 per 100,000 population, nearly twice the year 2000 objective of 1.1 per 100,000. Most invasive cervical cancers are regarded as preventable though frequent, high-quality screening, which detects pre-invasive lesions. Certain subgroups of women (minority, poor and uninsured) continue to fall behind in screening rates, and Hispanic women are less likely to have had a recent Pap test.<sup>53</sup>

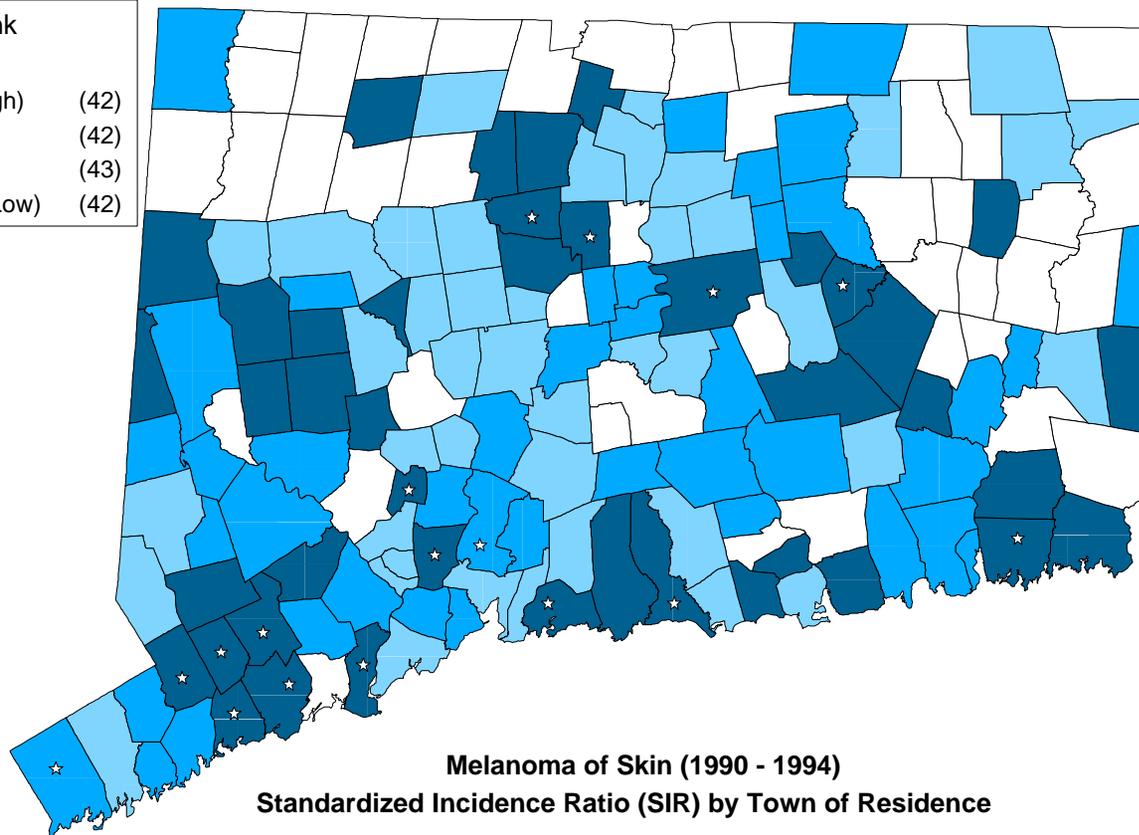
**Table 3-21**  
**Invasive Cervical Cancer**  
**Time Trends in Age-standardized Incidence Rates**  
**Connecticut, 1980-94**

Years	Incidence <sup>a</sup> per 100,000 Population
1980-84	8.1
1985-89	7.9
1990-94	7.4

Source: DPH, OPPE, CT Tumor Registry

<sup>a</sup> Standardized to 1970 U.S. standard million population.

<sup>53</sup> Polednak AP. Reported Pap test use by Hispanic women in Connecticut and Long Island. *Connecticut Medicine* 1996; 60:3-8.



**Melanoma of Skin (1990 - 1994)**  
**Standardized Incidence Ratio (SIR) by Town of Residence**

☆ Significantly elevated ( $p < 0.05$ ) SIR based on statewide rates  
Source: DPH, OPPE, Tumor Registry, 1997

Invasive cervical cancer incidence rates rise until the age of 45-49 years, with no clear pattern at older ages (Figure 3-32). Incidence rates are higher for black than white women. In 1990-94, the crude incidence rates for invasive cervical cancer were 12.8 per 100,000 for black women (97 cases) and 8.8 (667 cases) for white women. Estimated incidence rates were also higher in Hispanic women than all white women in Connecticut, although identification of Hispanic ethnicity in the Connecticut Tumor Registry is incomplete. Racial-ethnic differences can be explained largely by black-white differences in social class. Social class affects the risk of development of cervical lesions that can progress from pre-invasive to invasive cancer, and is also strongly related to screening rates.

### Screening and Potential for Intervention

For cervical cancer control, the *Healthy People 2000* target is to increase to at least 95% the proportion of women aged 18+ who have ever received a Pap smear, and to at least 85% those who received a Pap smear in the past 3 years. The 1987 baseline (national) values were 88% and 75%, respectively. Screening status for various demographic subgroups are shown in Table 3-24 .

The year 2000 target for women aged 18+ has almost been reached in Connecticut, with more than 80% reporting affirmatively in the 1990 through 1994 Behavioral Risk Factor Surveillance Surveys.<sup>54</sup> As with breast cancer screening, however, screening rates are overestimated in the BRFSS, data are not available on regular screenings in each woman surveyed, and certain subgroups are screened infrequently. Regular screening is important because of the limitations of Pap tests (e.g., inadequacy of the smear and the potential for misreading of smears). Moreover, the Pap test is a *screening* test, and is not intended to be diagnostic; some significant lesions will be missed, and some women found with such lesions will not receive proper diagnostic tests and treatment.

### Geographic Variation

Towns or regions with relatively large proportions of women of lower socioeconomic status, including minority women (blacks, Hispanics, and certain Asian groups), have higher incidence rates for invasive cervical cancer (Table 3-22).

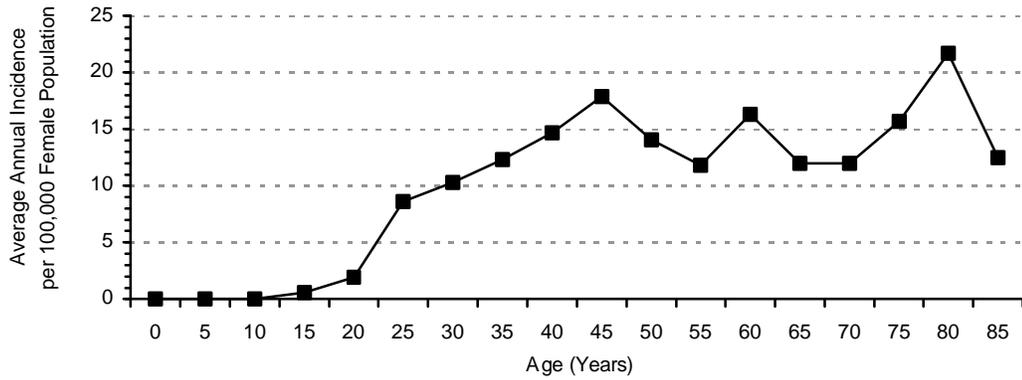
**Table 3-22**  
**Number of Invasive Cervical Cancers and SIR by Town of Residence <sup>a</sup>**  
**Connecticut, 1990-94**

Town	Number of Cancers		SIR
	Observed	Expected	
<i>Relatively High SIR</i>			
Bridgeport	57	31.2	1.82
New Haven	42	28.0	1.50
Windham	10	4.8	2.10
<i>Not statistically significantly elevated, but historically high SIR</i>			
Hartford	38	28.1	1.35
New London	11	5.6	1.95
West Haven	20	12.7	1.57

<sup>a</sup> Towns with more than 10 cancers are shown.  
Source: DPH, OPPE, CT Tumor Registry

<sup>54</sup> Connecticut Department of Public Health. *Behavioral Risk Factor Surveillance Survey*. 1996.

**Figure 3-32  
Invasive Cervical Cancer Age-specific Incidence Rates  
Connecticut, 1990-94**



Source: DPH, OPPE, CT Tumor Registry

**Table 3-23  
Number of Invasive Cervical Cancers and SIR by County of Residence  
Connecticut, 1990-94**

County	Number of Cancers		SIR
	Observed	Expected	
Fairfield	222	198.6	1.12
Hartford	163	201.1	0.81
Litchfield	38	41.3	0.92
Middlesex	40	33.7	1.19
New Haven	200	189.6	1.05
New London	68	54.9	1.24
Tolland	15	26.4	0.57
Windham	28	26.2	1.07

Source: DPH, OPPE, CT Tumor Registry

**Table 3-24  
Pap Smear Received within Preceding 3 Years  
United States, 1992**

Group	1987 Baseline	1992 Status	Year 2000 Target
All women aged 18+	75%	74%	85%
Hispanic women	66%	74%	80%
Annual family income <\$10,000	64%	66%	80%
Less than high school education	58%	58%	75%
Women aged 70+	44%	45%	70%

Source: CDC, National Center for Health Statistics, National Health Interview Survey

# CHRONIC OBSTRUCTIVE PULMONARY DISEASE

## Introduction

Chronic obstructive pulmonary disease (COPD) involves a process characterized by nonspecific changes in the lung parenchyma and bronchitis that can lead to emphysema and airflow obstruction. Clinically and pathologically, chronic bronchitis, emphysema, and chronic airway obstruction can be difficult to differentiate, and they are frequently grouped together under the heading of COPD. Age-adjusted mortality rates for males were fairly constant from 1986-1995, whereas rates for women have increased steadily (Figure 3-33). Mortality rates were similar for black and white males, but were lower for black females than white females (Figure 3-34). The economic cost of COPD includes both the cost of care and the loss of productivity. Disability in COPD patients progresses gradually after initial diagnosis, and after an average of 7.5 years, most COPD patients are no longer capable of productive work.<sup>55</sup>

COPD is thought to result from direct interaction of lung tissue with environmental agents, of which tobacco smoke is the most significant.<sup>56</sup> Thus, the strongest risk factor for COPD development is cigarette smoking. Both men and women smokers have approximately 10 times the risk for COPD compared to nonsmokers. The occurrence of wheezing, frequent cough, and airway hyper-responsiveness in children also has been associated with parental smoking.<sup>57</sup>

## Modifiable Risk Factors

Elimination of tobacco use is the single most important way to prevent COPD occurrence. Exposure to environmental tobacco smoke (ETS) is also known to cause the development or exacerbation of symptoms or illnesses that range from the sub-clinical to those requiring hospitalization. There is no known safe level of exposure to ETS, and no way to quantify actual exposure. In addition, individual characteristics or other factors that may affect resultant symptoms or illness are extremely difficult to account for. However, it is simpler to describe the risks of exposure to ETS for fetuses, infants, and very young children, populations whose respiratory, cardiovascular, and other bodily systems are developing and who are clearly at risk from smaller dosages that may be inconsequential in adults.

Children's exposure to ETS is a significant public health problem. Each year In Connecticut, an estimated 30 infants die from causes related to maternal smoking during pregnancy and/or exposure to ETS in the first months of life.<sup>58</sup> Affected male infants less than one year old lose almost 70 years of potential life, and female infants lose 76 years of potential life. There is some evidence that ETS exposure is a risk factor for asthma.

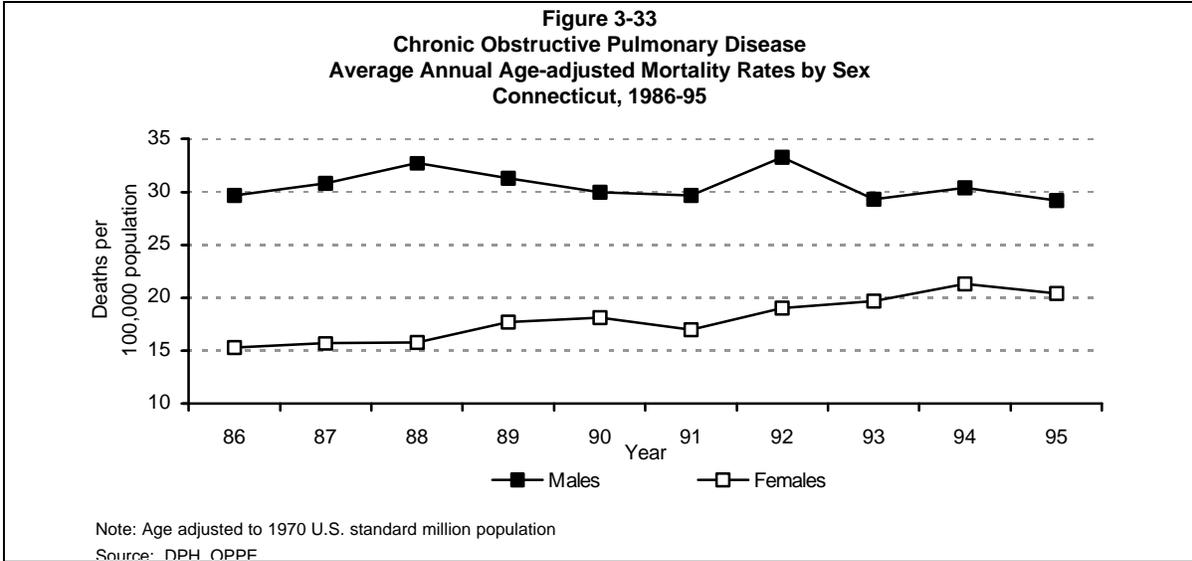
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<sup>55</sup> Goldring JM, James DS, Anderson HA. Chronic lung disease. In: *Chronic Disease Epidemiology and Control*, The American Public Health Association, 1993:179.

<sup>56</sup> Goldring JM.

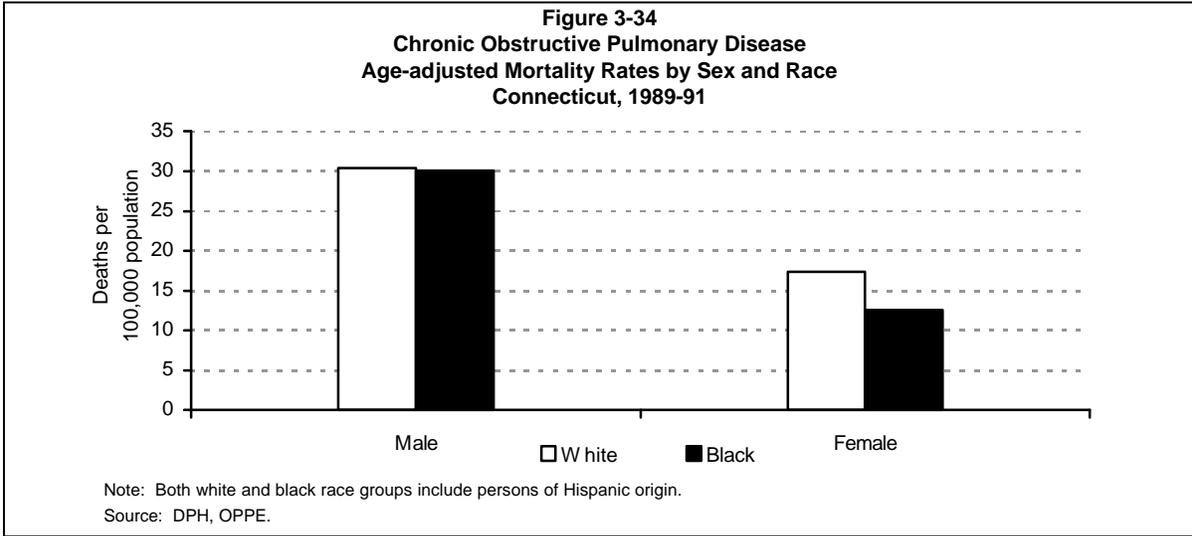
<sup>57</sup> Goldring JM.

<sup>58</sup> Adams ML. "The public health impact and economic cost of smoking in Connecticut, 1989." *CT Med*. 1994;58:195-198.



Potential for Intervention

Policy initiatives include raising the excise tax on cigarettes and media campaigns challenging the tobacco industry in extensive advertising efforts. A national tobacco settlement, approved by the U.S. Congress, has awarded money to states for public education programs that could be allocated for community interventions targeting women of childbearing age in prenatal clinic and office settings. These programs could focus on making protective environmental changes in the home and vehicles, and both quitting and decreasing smoking by this population. In addition, media awareness campaigns and especially media targeting youth could be funded. Based on experience in California and Massachusetts, where substantial amounts of money were allocated for tobacco use prevention, the most effective programs were high quality and highly promoted media campaigns and local community programs.



DIABETES

Diabetes is a major cause of death and disability in Connecticut. It is the leading cause of end-stage renal disease over all ages and the leading cause of blindness among working-age adults. Diabetes is a major cause of non-traumatic lower extremity amputations and major congenital malformations. Other complications associated with diabetes include cardiovascular disease and peripheral vascular disease. The disease burden of diabetes and its complications is large, costly, disproportionately affects minority populations and older age groups and is likely to increase as minority populations grow and the total population becomes older.

## Prevalence

Based on the 1994 Connecticut BRFSS, an estimated 5.1% or 127,000 adults (18 years and older) have diagnosed diabetes. However, national health surveys indicate that the prevalence of undiagnosed diabetes is as great as that of diagnosed diabetes.<sup>59</sup> Therefore, the true prevalence of adult diabetes in Connecticut is at least twice the BRFSS prevalence estimate or 10.2%. There are two types of diabetes, insulin-dependent diabetes (Type 1) and non-insulin-dependent diabetes (Type II). Type I diabetes (formerly known as “juvenile” diabetes) is one of the most common childhood diseases, affecting an estimated 1,400 children in Connecticut under age 20.<sup>60</sup>

Impaired glucose tolerance (IGT) refers to a condition in which blood sugar levels are higher than normal but not high enough to be classified as diabetes. IGT is a major risk factor for Type II diabetes. This condition is present in about 11% or approximately 273,500 Connecticut adults.<sup>61</sup> In addition, an estimated 915,170 adults in Connecticut are at increased risk of undiagnosed diabetes due to the risk factors of age, obesity, sedentary lifestyle, or history of gestational diabetes.<sup>62</sup>

## Mortality

Because people die of the complications of diabetes rather than the disease itself, diabetes is underreported as the underlying cause or even as a contributory cause of death. Diabetes was the seventh leading underlying cause of death listed on 1994 Connecticut death certificates, with 627 deaths directly attributable to diabetes. Diabetes also contributed to an additional 1,844 deaths in 1994 (Figure 3-35).

## Trends

A statistically significant difference ( $p < 0.05$ ) was found between the 1979-81 and 1989-91 age-adjusted mortality rates for diabetes (11.9 and 12.5 per 100,000 population, respectively), indicating an upward trend in mortality due to diabetes. Because of the higher prevalence of diabetes in minority populations and older Americans, an increase in the number of diabetics is expected due to the demographic shift in the population.

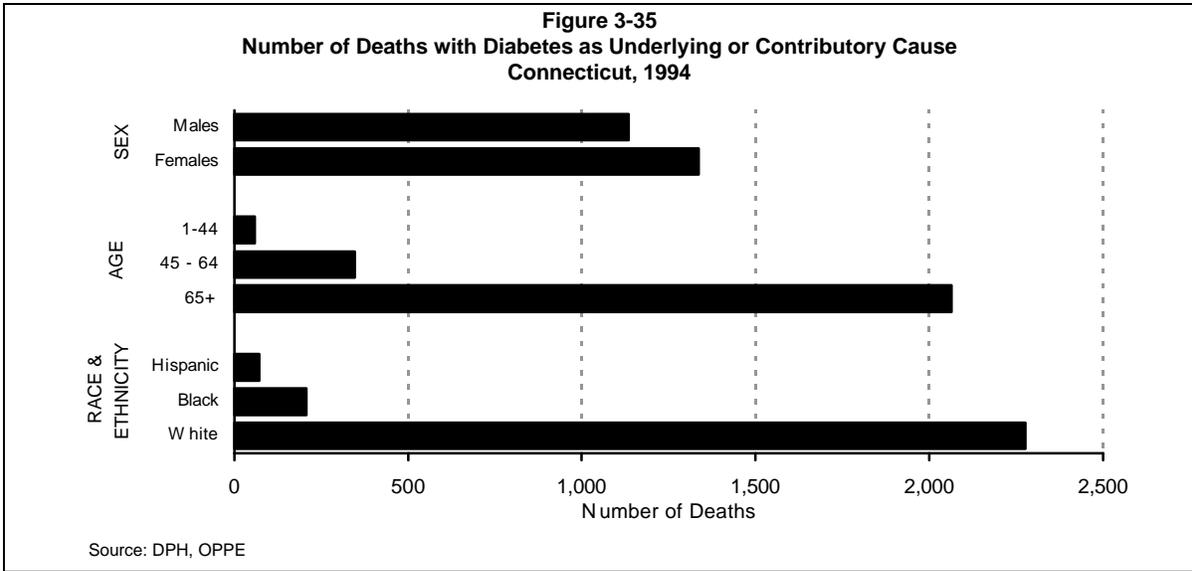
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<sup>59</sup> Harris MI, Hadden WC, Knowler WC, Bennett PH. Prevalence of noninsulin-dependent diabetes and impaired glucose and plasma glucose levels in US populations aged 20-74 years. *Diabetes Care*. 1987; 36:523-534.

<sup>60</sup> Laporte RE, Matsushima M, Yue-Fang Chang: Prevalence and Incidence of Insulin-Dependent Diabetes. In *Diabetes in America*, Harris MI, ed. National Diabetes Data Group, NIH publ. no. 95-1468, 1995.

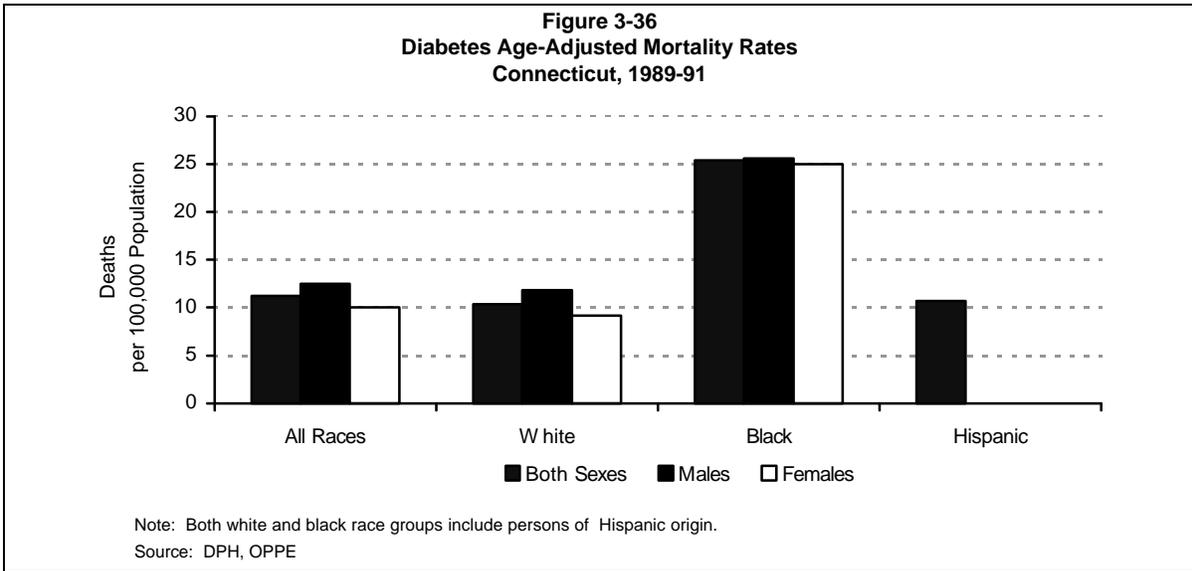
<sup>61</sup> U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention. *National Diabetes Fact Sheet: National Estimates and General Information on Diabetes in the United States*. Atlanta, GA: DHHS. 1995.

<sup>62</sup> Connecticut Department of Public Health. *Behavioral Risk Factor Surveillance Survey*. 1996. Algorithm in “‘Estimated Number of Adults with Diagnosed Diabetes, by Age, Sex and State’ and ‘Estimated Number of Adults in the Nondiabetic Population at Increased Risk for Undiagnosed Diabetes by State, United States’”, prepared by CDC, Division of Diabetes Translation, 1992.

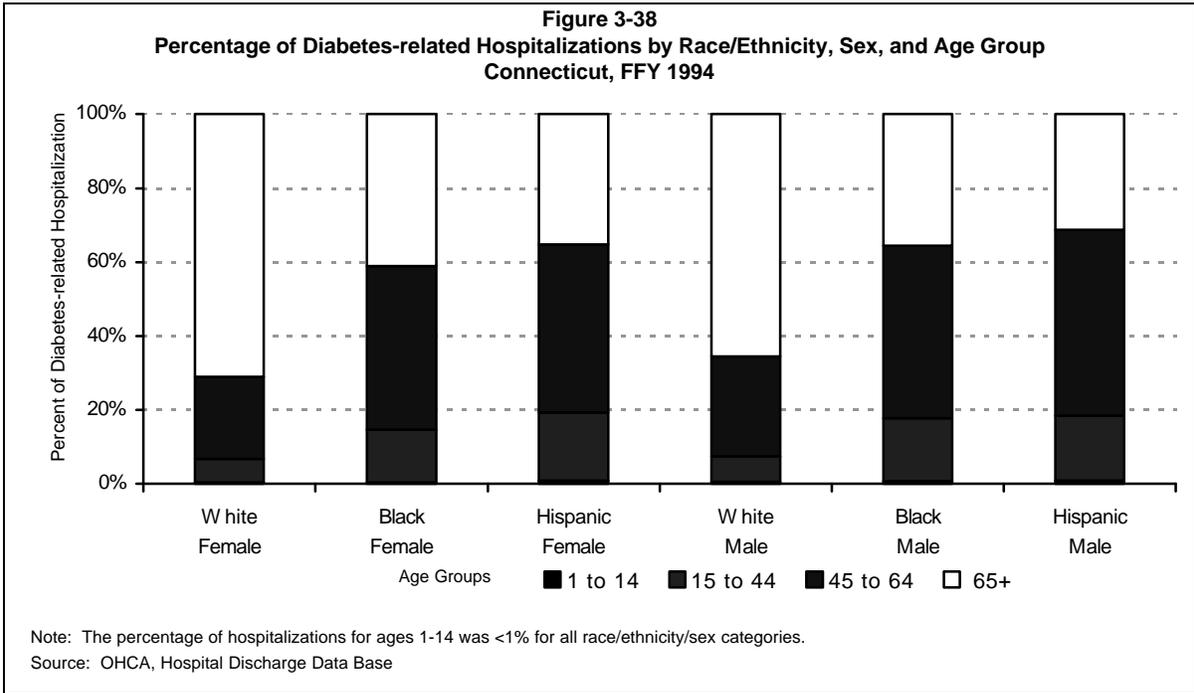
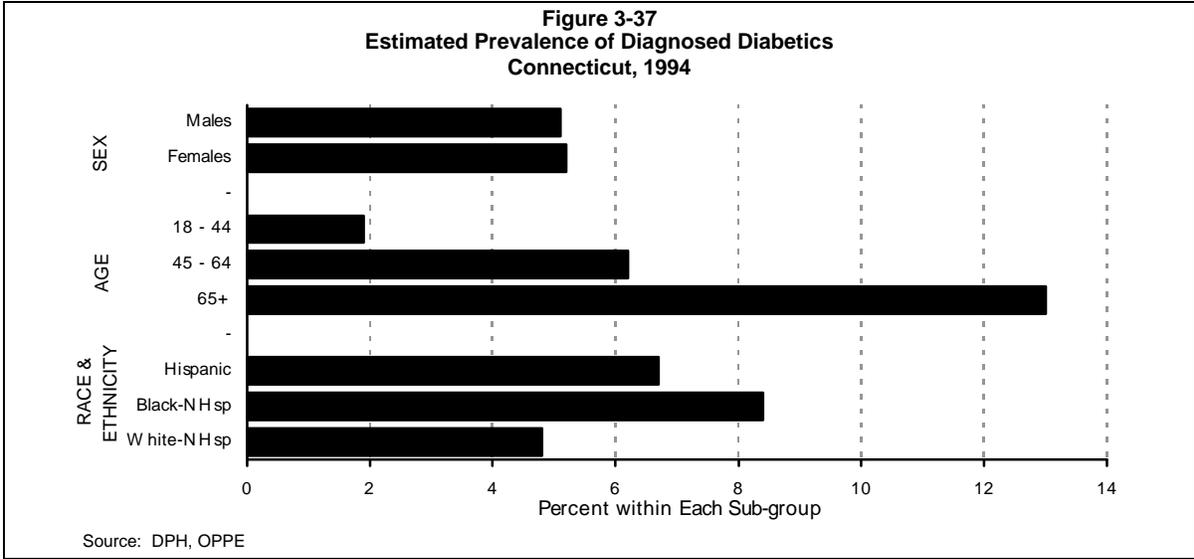


### High Risk Subgroups

The 1989-1991 Connecticut age-adjusted mortality rate for diabetes was greater for blacks than whites, regardless of sex (Figure 3-36). As shown in Figure 3-37, the prevalence of diabetes was disproportionately high among minorities and older age groups. Black non-Hispanics and Hispanics had higher prevalence rates than white non-Hispanics, and the 65+ age group had the highest prevalence rate of all age groups.<sup>63</sup> Preliminary analyses of 1994 Connecticut hospital discharge data indicate that black and Hispanic diabetics were hospitalized at younger ages than whites for diabetes and related conditions (Figure 3-38).



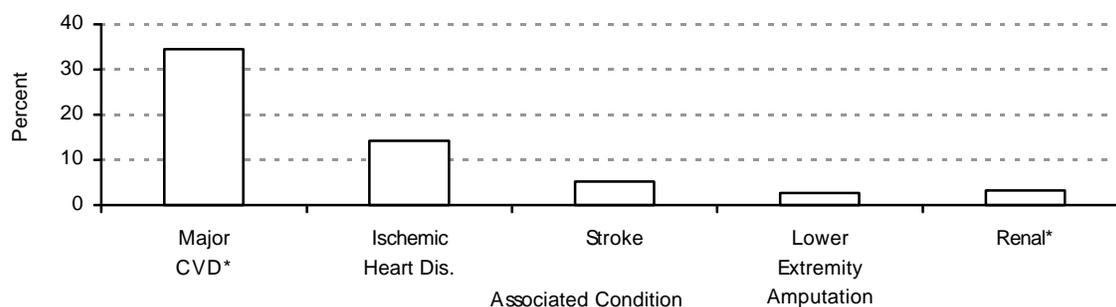
<sup>63</sup> Connecticut Department of Public Health, *Behavioral Risk Factor Surveillance Survey*. 1996.



**Morbidity**

People with diabetes in Connecticut suffer from many diabetes-related complications or conditions. The percentage of hospitalized diabetics receiving inpatient treatment for selected diabetes associated conditions (Figure 3-39) indicates that cardiovascular disease is a major comorbidity-morbidity of diabetes.

**Figure 3-39**  
**Hospitalized Diabetics (N=42,471)**  
**Percent Receiving Inpatient Treatment for Diabetes-associated Conditions**  
**Connecticut, 1994**



\*\*CVD\* = Cardiovascular disease. "Renal" includes dialysis treatments and kidney transplants.

Source: OHCA, Hospital Discharge Abstract and Billing Data Base

The complications and conditions most commonly associated with diabetes are as follows.<sup>64</sup>

- *Heart Disease* - Cardiovascular disease is 2 to 4 times more common in people with diabetes. Middle-aged people with diabetes have total death rates (all causes) twice as high, and heart disease death rates about 2 to 4 times as high, as middle-aged persons without diabetes. In 1994, cardiovascular disease was reported on death certificates in 48% of diabetes-related deaths in CT.
- *Stroke* - The risk of stroke is 2 to 4 times higher among persons with diabetes.
- *High Blood Pressure* - An estimated 60 - 65% of persons with diabetes have high blood pressure.
- *Blindness* - An estimated 40% of people with diabetes have at least mild signs of diabetic retinopathy. Diabetes is the leading cause of new cases of blindness among adults 20 to 74 years of age. Diabetes was the major cause of blindness for 1,859 legally blind people registered with the CT Board of Education and Services for the Blind in 1994.<sup>65</sup>
- *Kidney Disease (Treatment by Dialysis or Transplantation)* - Diabetes is the leading cause of end-stage renal disease (ESRD), accounting for 36% of new cases. Diabetes was listed as the primary cause of ESRD for 730 Connecticut residents registered with the ESRD Network of New England.<sup>66</sup> It is known that diabetes status is underreported for persons with ESRD due to the reporting of only the primary cause of ESRD for those registered with the network. In 1994, 1,409 hospitalizations were for diabetes-related kidney treatment, transplant or dialysis.<sup>67</sup>
- *Nerve Disease* - About 60 - 70% of people with diabetes have mild to severe forms of diabetic nerve damage, with such manifestations as impaired sensation in the feet or hands, delayed stomach emptying, carpal tunnel syndrome, peripheral neuropathy. Severe forms of diabetic nerve disease are a major contributing cause of lower extremity amputations.
- *Amputations* - In 1994, 1,085 Connecticut residents underwent lower extremity amputations due to diabetes or diabetes-related conditions.<sup>68</sup>
- *Dental Disease* - Studies show that periodontal disease, which can lead to tooth loss, occurs with greater frequency and severity among persons with diabetes. In one study, 30% of patients with Type I diabetes over age 18 had periodontal disease.

<sup>64</sup> U.S. Department of Health and Human Services.

<sup>65</sup> Connecticut Board of Education and Services for the Blind. *Statistics on Blindness in Connecticut, August 1994*. Wethersfield, CT, 1994.

<sup>66</sup> End Stage Renal Disease Network of New England, Inc. *ESRD of New England 1995 Annual Report*. New Haven, CT, 1996.

<sup>67</sup> Connecticut Office of Health Care Access. Hospital Discharge Abstract and Billing Data Base.

<sup>68</sup> Connecticut Office of Health Care Access.

- *Pregnancy Complications* - The rate of congenital malformations in babies born to women with pre-existing diabetes varies from 0 - 5% among women who receive preconception care to 10% among women who do not receive preconception care. Between 3% and 5% of pregnancies among women with diabetes result in death of the newborn; this compares to a rate of 1.5% for women who do not have diabetes. Gestational diabetes develops in some pregnant women, then disappears when the pregnancy is over. A history of gestational diabetes, however, is a risk factor for eventual development of Type II diabetes. Gestational diabetes occurs in 2% to 5% of pregnancies, and at higher rates among African Americans, Hispanics, and American Indians.

## Economic Aspects

The estimated direct cost (medical care) and indirect cost (lost productivity and premature mortality) of diabetes in CT totaled about \$1.6 billion in 1994.<sup>69</sup> Approximately \$52 million was charged for 1994 CT in-patient hospitalizations due to diabetes and its complications. Medicaid and Medicare were the expected payers for 78% of this bill. Charges for cardiovascular disease hospitalizations for which diabetes was a contributing factor totaled \$236.7 million in 1994.<sup>70</sup>

## Modifiable Risk Factors and Potential for Intervention

Approximately 90% of all people with diabetes have Type II.<sup>71</sup> Obesity is strongly linked to the development of Type II diabetes. Interventions to reduce obesity including nutrition education programs, physical activity programs, and educational programs to increase public knowledge of diabetes. Targeting high risk populations would reduce diabetes incidence, prevalence, and mortality rates in Connecticut. Complications associated with diabetes can be prevented or delayed with early detection, improved delivery of care, and diabetes self-management. Interventions that provide individuals with the knowledge and skills required in adequate diabetes self-management, knowledge and utilization of available community resources, and appropriate utilization of health care resources could do much to reduce the economic and personal burden associated with diabetes.

## DENTAL DISEASES

Dental diseases and conditions are among the most prevalent and preventable chronic health problems, and dental caries remains the single most common disease of childhood that is not self-limiting or treatable with antibiotics. Dental disease is an infectious disease process that can reduce overall health, productivity, and quality of life.

Seventy percent of socioeconomically disadvantaged children, aged 6-8 years, have untreated dental disease. Poor and minority children, who make up 20% of the population, experience between 60 and 75% of the dental disease.<sup>72</sup> The poor and minority populations in Connecticut are growing relatively more rapidly than the majority population, with a concomitant projected overall rise in the prevalence of dental disease in children. According to a DPH study on the accessibility and availability of the dental provider network under Medicaid managed care, a severe lack of access to dental care exists for Connecticut's

<sup>69</sup> American Diabetes Association. *Direct and Indirect Costs of Diabetes in the United States in 1992*. Alexandria, VA: 1993.

<sup>70</sup> Connecticut Office of Health Care Access.

<sup>71</sup> U.S. Department of Health and Human Services, Public Health Service, National Institutes of Health, National Diabetes Data Group. *Diabetes in America*. 2<sup>nd</sup> edition. Bethesda, MD: NIH publication number 95-1468. 1995.

<sup>72</sup> U. S. Department of Health and Human Services, Public Health Service, National Institute of Health. *Oral Health of United States Children, National and Regional Findings: the National Survey of Dental Caries in US School Children 1986-1987*. Bethesda, MD: (NIH)89-2247. 1989.

Medicaid-eligible children. The numerous obstacles impeding access to dental care for the state's neediest children are discussed in the study report.<sup>73</sup>

The 1996 prevalence of dental decay in Connecticut in 6-8 year old children (approximately 55%) may be at least equal to the national 1996 baseline (54%), which is 20% higher than the *Healthy Connecticut 2000* target of <35%.<sup>74</sup> Although year 2000 targets have been set for prevalence of dental decay in adolescents aged 15 and for the percent of caregivers who use feeding practices that prevent baby bottle tooth decay, Connecticut levels have not been determined.

Baby bottle tooth decay (BBTD) is a serious, fully preventable disease that affects preschool children. BBTD is caused by improper feeding practices, such as putting a baby to bed with a bottle of liquids high in sugar (such as juice), or pacifying a baby during the day with a bottle. Continuous exposure of the baby's fragile teeth to such liquids causes rapid decay, resulting in destruction of the teeth, severe pain, difficulty eating and resultant nutritional impairment, crooked and decayed permanent teeth, ear infections, and possible future speech problems. Estimates of the prevalence of BBTD range from 6% to as high as 85% in populations at risk.<sup>75,76</sup> A survey of children enrolled in the Head Start Program in the city of Hartford indicated a prevalence rate for BBTD of 25%.<sup>77</sup> A survey of preschool children in the towns of northwestern Connecticut revealed a 20% prevalence of BBTD, and over 70% prevalence of risk behavior (improper infant feeding patterns) among young mothers.<sup>78</sup> The cost of treating extensive early childhood caries, such as baby bottle tooth decay, is more than \$1,000 per child.

In 1986, 36% of people aged 65 and older had lost all their teeth. Low-income adults aged 65 and older experienced an even greater rate of tooth loss (46%).<sup>79</sup> In older people, the loss of natural teeth can contribute to psychological, social, and physical handicaps. Even when missing teeth are replaced with dentures, there may be limitations in speech, chewing ability, and quality of life, yet visits to a dentist decline with age.

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<sup>73</sup> Wolfe SH. *Present and Projected Dental Provider Participation in the Connecticut Medicaid Managed Care Program: Impact on Dental Care Access*. Hartford, CT: Connecticut Department of Public Health. 1996 December.

<sup>74</sup> Connecticut Oral Health Survey and Needs Assessment conducted by the DPH Oral Health Program.

<sup>75</sup> U. S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention. *Healthy People 2000: National Health Promotion and Disease Prevention Objectives - Healthy People 2000 Review 1995-96*. Hyattsville, MD: (PHS) 96-1256. 1996 November.

<sup>76</sup> Bruerd B, Jones C. Preventing baby bottle tooth decay: eight-year results. *Public Health Rep.* 1996; 111:63-66.

<sup>77</sup> Benitez C, O'Sullivan D, Tinanoff N. Effect of a preventive approach for the treatment of nursing bottle caries. *ASDC Jour Dent Child.* 1994; 61(1):46-50.

<sup>78</sup> Connecticut Department of Public Health, Unpublished data from the Oral Health Program Survey.

<sup>79</sup> U. S. Department of Health and Human Services. *Healthy People 2000 Review 1995-96*.

# INJURIES

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## HIGHLIGHTS

- Unintentional injuries are the leading cause of death for persons aged 1 to 34 years.
- Two-thirds of unintentional injury deaths in Connecticut occur to males.
- During 1994, 42 State residents died in residential fires, almost twice the number reported in 1993.
- Falls are the most common cause of nonfatal injury and the second leading cause of unintentional injury death in Connecticut.
- About 80% of all Connecticut deaths due to falls occur among people aged 65 and older.
- Motor vehicle crashes are the leading cause of unintentional injury death in Connecticut, accounting for an average of nearly one death per day.
- In states like Connecticut with helmet laws that apply only to young riders, death rates from head injuries are twice as high among motorcyclists as in states with full motorcycle helmet laws.
- Drownings account for 1 in 20 unintentional injury deaths in Connecticut.
- Nearly half of Connecticut suicides in 1994 were performed with a firearm.
- Connecticut's age-adjusted mortality rate for homicides nearly doubled between 1986 and 1994. Virtually all of this increase was due to the increase in firearm homicides.
- Black males between the ages of 15 and 34 years old account for 1.5% of Connecticut's population but 30% of its homicide victims.
- Firearms cause nearly one of every five injury deaths in Connecticut.

## UNINTENTIONAL INJURIES

### Introduction

Unintentional injuries kill 1,000 Connecticut residents and cause 36,000 hospital admissions<sup>80</sup> in our state each year. Injuries are the leading cause of premature death for males and the second leading cause for females, surpassed only by cancers.<sup>81</sup> Unintentional injuries are the third leading cause of death based on age-adjusted mortality rate (24.4 per 100,000 population) and the sixth leading cause of death in Connecticut based on number of deaths (1,004 deaths) in 1994.<sup>82</sup> Unintentional injuries are the leading cause of death for individuals between the ages of 1-34 years. More children and adolescents die each year from unintentional injuries than from all other childhood diseases combined.

An estimated one in four Americans is injured annually, costing the U.S. more than \$100 billion a year in medical care costs and lost productivity.<sup>83</sup> The leading causes of fatal unintentional injuries include motor vehicle crashes, falls, fires, and drownings. The relative importance of various causes of injury vary substantially with age. For example, motor vehicles are the leading cause of unintentional injury death for ages up to 75 years, while falls are most frequent for ages 75 and older. The types of unintentional injuries discussed here are residential fires, falls, motor-vehicle-related injuries, and drownings.

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<sup>80</sup> Office of Health Care Access. Hospital Discharge Abstract and Billing Data Base. FY 1995 N=<35,950.

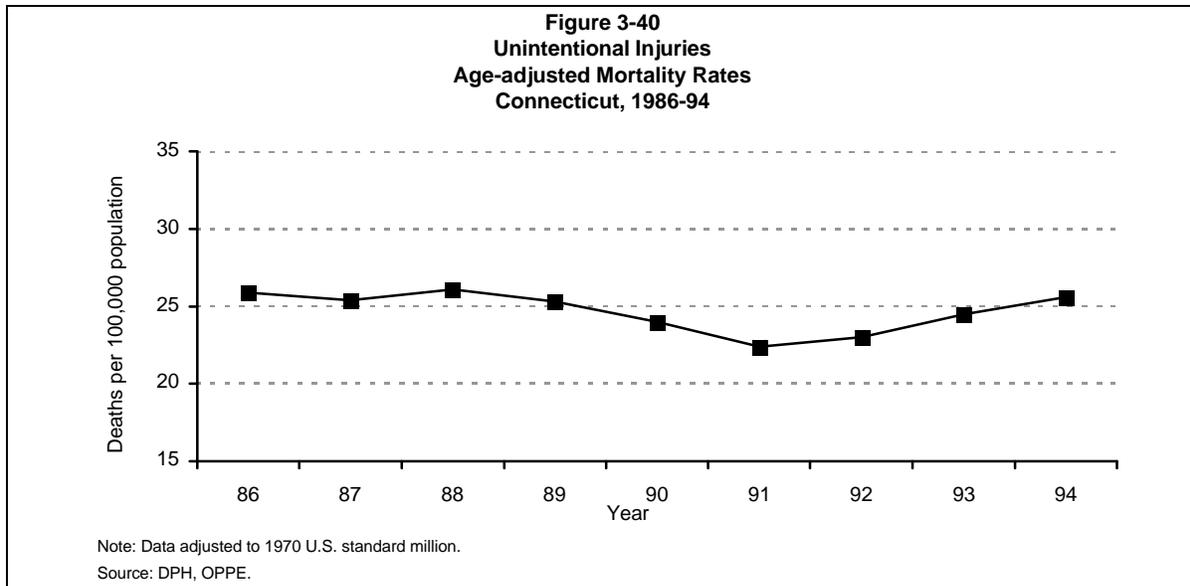
<sup>81</sup> Years of Potential Life Lost before age 65, adjusted to 1940.

<sup>82</sup> Age-adjusted to 1940 U.S. standard million.

<sup>83</sup> Rice DP, MacKenzie EJ, and Associates. *Cost of Injury in the United States: A Report to Congress*. San Francisco, CA: Institute for Health and Aging, University of California, and Injury Prevention Center, Johns Hopkins University. 1989:282pp.

## Time Trends

Although there was a 23.5% decline in the mortality rate due to unintentional injuries from 1979-81 to 1989-91, there was a steady increase in the mortality rate since 1991. From 1991 to 1994, the mortality rate increased 14% (Figure 3-40).



## Risk Groups

Deaths caused by injury comprise a disproportionately large share of deaths in young age groups compared with deaths from all causes (Figure 3-41). Two thirds of unintentional injury deaths in Connecticut occur to males. Death rates for males exceed those for females for every age group (Figure 3-42).

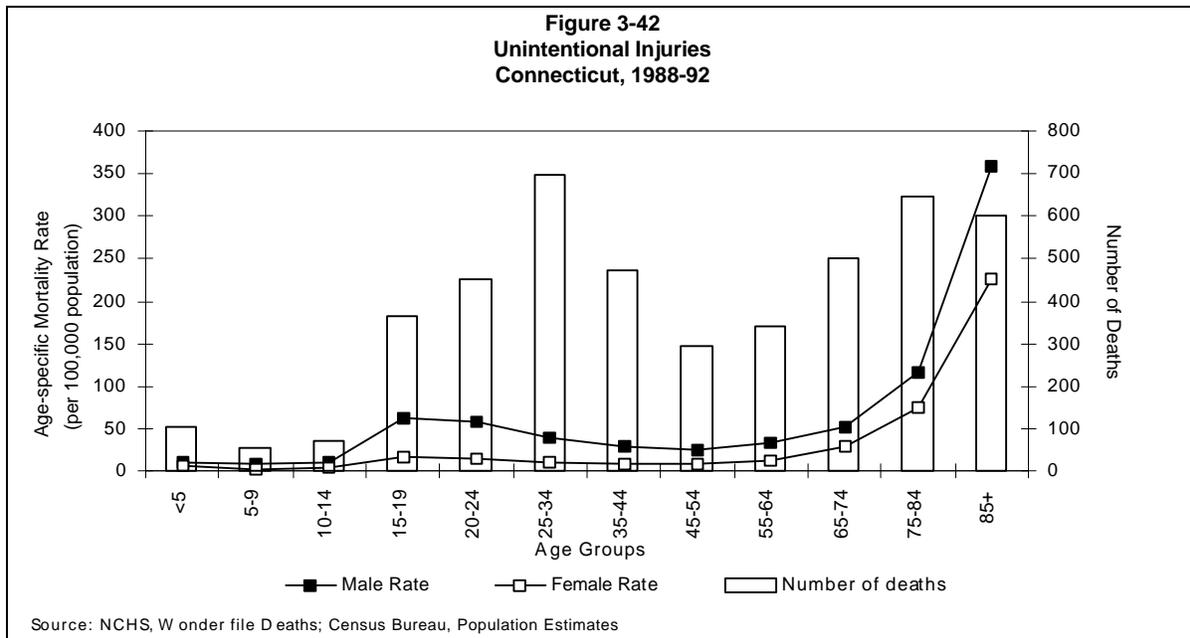
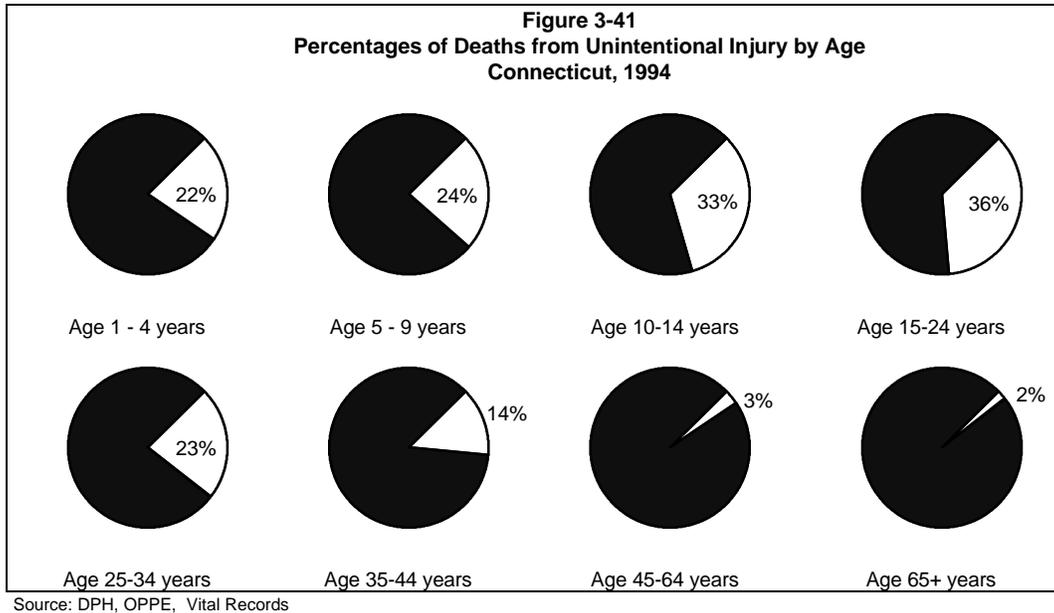
## Modifiable Risk Factors

Most risk factors are specific to the type of injury. However, several general factors are common to many types of injuries. These include:

- Alcohol/substance abuse
- Risk-taking behavior, especially among children, adolescents, and young adults.
- The perception that injuries are “accidents” and are a normal part of life.
- Low socioeconomic status.

## Intervention Strategies

- Develop or enhance injury surveillance capability at the state and local levels.
- Promote the development of community-based intervention programs. Effective programs may include a mixture of strategies, including environmental and engineering changes, enforcement and legislation, and education.



## RESIDENTIAL FIRES

### Summary

Deaths due to fires include burn injury deaths and smoke inhalation deaths. During 1994, 42 Connecticut residents died in residential fires, almost double the number (22) reported in 1993. The most common cause of all fatal fire deaths was fires in private dwellings.

### High Risk Subgroups

Very young children, the elderly, and black males are at highest risk of residential fire deaths. During 1994, children under the age of five years had an age-adjusted mortality rate for residential fires of 2.2 per 100,000 population, which is twice the AAMR of 1.1 per 100,000 for the total population. A combination of factors contribute to the increased risk of children and the elderly, such as less acute perception of danger, less control of their environments, and a limited ability to react properly and promptly. Because children have thinner skin, the burns they sustain are more severe. Persons aged 65 and older also had a mortality rate of 2.2 per 100,000 population, twice the rate of the general population. Black males had a residential fire death rate of 2.4 per 100,000, more than twice the rate of the general population.

### Modifiable Risk Factors

- Lack of functioning smoke detectors
- Cigarette smoking
- Low socioeconomic status
- Lack of maintenance for heating and cooking equipment and use of alternative heating and cooking sources
- Improper storage of matches, lighters, fuel, and other flammable materials
- Lack of supervision for young children

### Intervention Strategies

- Promote installation of smoke detectors and conduct public education campaigns to encourage smoke detector testing and battery replacement.
- Conduct community smoke detector giveaway and installation programs.
- Enforce building and fire codes including requirements for smoke detectors in all new residential housing and existing multi-family housing designed for 2+ families and requirements for sprinklers.
- Expand juvenile fire setter programs, and promote identification and referral of at risk children.
- Conduct fire safety education campaigns targeting parents, children, and general public with fire safety messages including “ Stop, Drop and Roll”, supervision of children around fire sources, the role of alcohol abuse and smoking in residential fires, and development and practice of exit drills from the home.
- Flammability standards for children’s sleep wear and mattress have proven effective in reducing risks. Standards should be expanded to cover clothing and furniture intended for other age groups.

## FALLS

### Summary

In 1995, falls were the most common cause of non-fatal injury and the second leading cause of unintentional injury death in Connecticut (196 deaths). In FFY 1995, there were 11,055 hospitalizations in Connecticut due to falls, nearly 60 hospitalizations for every fatality. The hospitalization rate for falls during 1995 was 378/100,000 residents.<sup>84</sup> Each year one person in thirty receives emergency treatment because of a fall.<sup>85</sup> Nonfatal falls result in high morbidity cost because falls often result in long term disability.<sup>86</sup>

### Time Trends

The 1994 Connecticut age-adjusted mortality rate for falls was 2.4 per 100,000 population for all ages, compared to 1.8 in 1987. During the intervening years the rate ranged from a high of 2.5 to a low of 2.1, with no consistent upward or downward trend.

### High Risk Subgroups

The elderly are at highest risk of both dying and being hospitalized as the result of a fall, because of the greater severity of injury and longer recovery periods required. More than 40% of all Connecticut deaths due to falls occur among people aged 85 or older, although this group makes up less than 2% of the population. Approximately 80% of all Connecticut deaths due to falls occur among people aged 65 and older. The 1994 death rate due to falls for persons aged 65 and over was more than seven times that of the total population, and the rate for persons 85 years and older was 62 times that of the general population.

Although young children have a very low death rate from falls compared to other age groups, falls are a leading cause of nonfatal injury. Nationally, children aged 14 and under account for one-third of all fall related visits to hospital emergency departments.<sup>87</sup> Osteoporosis is a risk factor for falls, especially among the elderly (see below); osteoporosis is eight times more common in women than in men<sup>88</sup>, and women have higher rates of hip fractures than men, at least to age 95. Males at all ages are at higher risk than females for fall-related deaths although the male-to-female ratio is considerably less (3:1) than for other causes of injury-related death.<sup>89</sup> Elderly females, however, are at considerably higher risk than males for nonfatal fall-related injuries.

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<sup>84</sup> Office of Health Care Access.

<sup>85</sup> McCaig LF. *National Hospital Ambulatory Medical Care Survey: 1992 Emergency Department Summary*. Advance Data from vital and health statistic; # 245. Hyattsville, MD: National Center for Health Statistics. 1994.

<sup>86</sup> Rice DP, MacKenzie EJ, and Associates.

<sup>87</sup> *Falls Fact Sheet, National Safe Kids Campaign*. 1996.

<sup>88</sup> U. S. Department of Health and Human Services. *Unrealized Prevention Opportunities: Reducing the Health and Economic Burden of Chronic Disease*. 1997 March.

<sup>89</sup> U. S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, National Center for Health Statistics. CDC WONDER/PC, Version 3.2. 1997 February.

*Healthy People 2000* identified persons between 65 and 85 years, persons 85 years and older, and black males aged 30 to 69 years as target populations.<sup>90</sup> In 1994, Connecticut's mortality rate from falls exceeded the U.S. rate<sup>91</sup> for all ages, for persons aged 85 and older and for black males aged 30-69 years, though the number of deaths among black males was small (5 in 1994).

### Modifiable Risk Factors

Different risk factors are associated with falls among different age groups. Approximately 80% of falls among children under the age of four occur in the home and are associated with furniture, stairs, and windows. Falls among children aged 5-14 years are divided between home, school, and other locations and are often associated with playground equipment.<sup>92</sup>

Falls among older adults are usually related to a combination of risk factors including home and environmental hazards, interaction and misuse of medications, physical inactivity, certain diseases, alcohol abuse, vision problems, and osteoporosis.<sup>93</sup> Early menopause, either natural or surgical, has been associated with an increased risk of osteoporosis. Potentially modifiable risk factors, in order of impact, include immobility, heavy alcohol use, chronic use of corticosteroids, lack of use of estrogen replacement therapy, smoking, physical inactivity, and low calcium intake.<sup>94</sup>

### Intervention Strategies

- Promote programs that stress proper nutrition and exercise to reduce or delay the onset of osteoporosis. Children and adolescents should consume adequate amounts of calcium; cigarette smoking, heavy drinking, and excessive thinness should be discouraged; and physicians should explain the benefits (and risks) of estrogen replacement therapy to women approaching menopause.
- Conduct safety assessments to identify and correct environmental hazards in and around the home.
- Promote health care assessments to identify and address conditions that may increase risk of falls.
- Insure regular access to preventive health care services such as vision screening.
- Promote exercise programs designed to increase strength and improve balance gait and flexibility.
- Conduct medication safety reviews to identify drug interactions/misuse that place older adults at risk of falls.
- Develop social support systems for older adults especially those living alone or in isolated areas.
- Promote or require the use of window guards in multi-story residences where young children live.
- Promote safe design and regular inspection and maintenance of playgrounds, with a special focus on maintaining the protective surface to a depth of 9-12 inches.
- Promote or require the use of helmets and other appropriate safety gear for sports and recreational activities such as bicycling, motorcycling, in-line skating, and skate boarding.
- Educate parents and caregivers on home safety hazards including stairs, babywalkers, windows, and the importance of supervision.

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<sup>90</sup> U. S. Department of Health and Human Services, Public Health Service. *Healthy People 2000: National Health Promotion and Disease Prevention Objectives*. Washington DC: Public Health Service. 1990.

<sup>91</sup> U. S. Department of Health and Human Services, Public Health Service. *Healthy People 2000: National Health Promotion and Disease Prevention Objectives - Healthy People 2000 Review 1995-96*. Hyattsville, MD: (PHS) 96-1256. 1996 November.

<sup>92</sup> *Falls Fact Sheet, National Safe Kids Campaign*.

<sup>93</sup> American Association of Retired Persons. *Developing Fall Prevention Programs for Older Adults - A Guide for Program Planners and Volunteer Leaders*. AARP. 1993.

<sup>94</sup> Brownson RC, Remington PL, and Davis JR. Arthritis and other musculoskeletal disease. In: *Chronic Disease Epidemiology and Control*. American Public Health Association. 1993.

# Motor-Vehicle-Related Injuries

## Summary

Motor vehicle crashes are the leading cause of unintentional injury death in Connecticut, accounting for an average of nearly one death per day.<sup>95</sup> No disease or injury claims more lives of people between the ages of 1 and 34. Motor-vehicle-related injuries also account for nearly 4,000 hospitalizations in Connecticut each year<sup>96</sup> and represent 5% of emergency department visits.<sup>97</sup> As adults aged 70 and older become a greater proportion of the population, they will account for an increasing percentage of the licensed driving population. They also represent a greater share of the motor vehicle injury problem each year. Older people have a greater risk of crashes per mile driven than younger adults, and once involved in a crash, they are more vulnerable to injury and death.<sup>98</sup>

The 1994 Connecticut age-adjusted death rate due to motor vehicle crashes was 10.9 per 100,000 population.<sup>99</sup> Connecticut has surpassed the *Healthy People 2000* target of 14.2 per 100,000, and falls just short of the *Healthy Connecticut 2000* target of 10.8 per 100,000.

Motor-vehicle-related injuries include deaths and injuries to motor vehicle occupants, motorcyclists, and bicyclists, and pedestrians struck by motor vehicles. As shown in Figure 3-43, occupants including both drivers and passengers comprise more than half of these fatalities, while pedestrians constitute about one-quarter of these deaths.

## Time Trends

Death rates and number of deaths due to motor vehicle crashes in Connecticut have dropped since the 1980s. After peaking in 1988, the number of deaths dropped by more than one-third (Figure 3-44). Alcohol involvement in fatal crashes also decreased between 1988 and 1994, both in terms of numbers and as a percentage of all motor vehicle fatalities; it increased, however, in 1995 (Figure 3-44).

## High Risk Groups

Adolescents and young adults are at highest risk of dying of motor vehicle injuries, while the elderly rank second. In 1994, males between the ages of 15 to 34 accounted for the most motor vehicle-related fatalities (Figure 3-45), and males aged 85 and older had the highest rate of death. Between 1990 and 1994, three out of every four motor vehicle-related fatalities to Connecticut residents occurred to males. Males between the ages of 20-24 were four times more likely to be killed than females.

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<sup>95</sup> ICD-9 Codes: E810-E825, 1990-1994 = 1,759 deaths or 351.8/year.

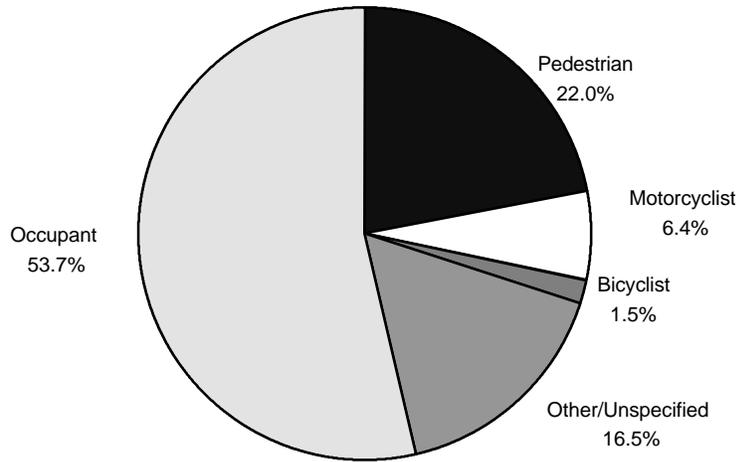
<sup>96</sup> Office of Health Care Access. (3,980 discharges for FY95).

<sup>97</sup> McCaig LF.

<sup>98</sup> U. S. Department of Transportation, National Highway Traffic Safety Administration. *Addressing the Safety Issues Related to Younger and Older Drivers - A Report to Congress January 19, 1993 on the Research Agenda of the National Highway Traffic Safety Administration*. DOT HS807 957. 1993.

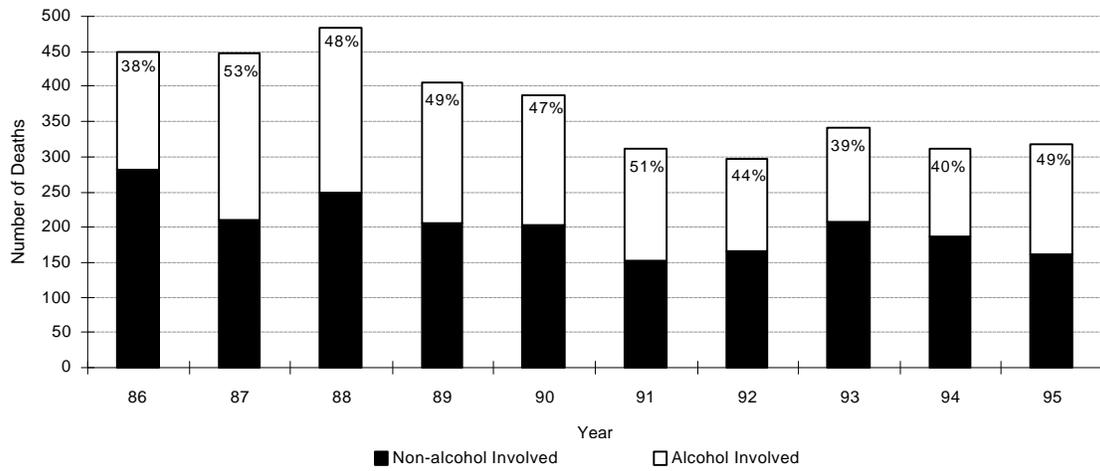
<sup>99</sup> Mortality rates adjusted to 1940 standard million.

**Figure 3-43**  
**Motor-vehicle-related Fatalities**  
**Percentage of Deaths by Person Killed**  
**Connecticut, 1994**

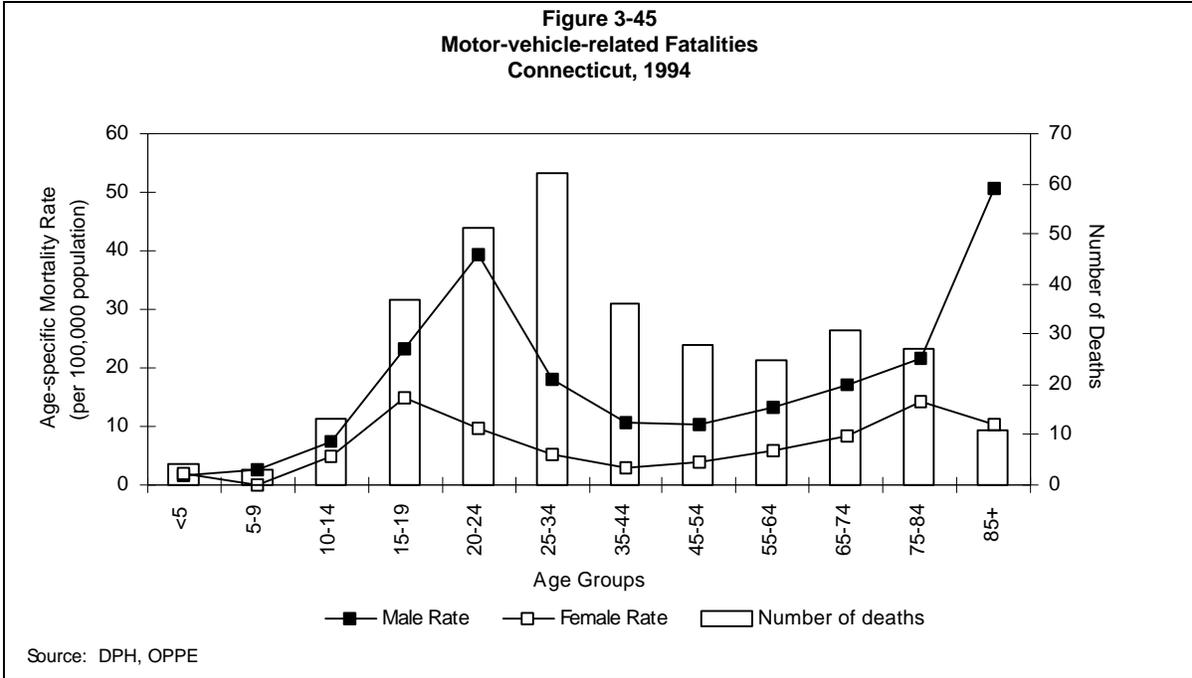


Source: DPH, OPPE, Vital Records.

**Figure 3-44**  
**Motor-vehicle-related Fatalities**  
**Total Number and Percentage Involving Alcohol**  
**Connecticut, 1986-95**



Source: Connecticut Department of Transportation. Based on occurrences as reported in police crash reports.



### Modifiable Risk Factors

Major factors contributing to the likelihood of a motor vehicle accident include speed, vehicle characteristics, roadway features (include lighting), alcohol intoxication, and other drug use. When a crash occurs, important determinants of the likelihood and severity of injury include speed of impact, vehicle crash-worthiness, the use of airbags, safety belts, child safety seats, and motorcycle and bicycle helmets.

#### *Safety Belts*

Research studies indicate that the use of lap and shoulder safety belts in passenger cars reduces the risk of fatal or serious injury by 40-55%.<sup>100</sup> The average hospital bill for a driver admitted as a result of motor vehicle injury is 55% higher if the person is unbelted.<sup>101</sup>

#### *Child Safety Seats*

Child safety seats are extremely effective when correctly installed and used, reducing the risk of death by 71%, hospitalizations by 67%, and minor injuries by 50%.<sup>102</sup>

#### *Alcohol*

Two in five Americans will be involved in an alcohol-related crash at some time in their lives. Among fatally injured motor vehicle drivers in Connecticut in 1995, 39.5% had blood alcohol levels at or above 0.10%.<sup>103</sup>

<sup>100</sup> U.S. Department of Transportation, National Highway Traffic Safety Administration. Final Rule, FMVSS 208: Occupant Crash Protection, 49 CFR, part 571. Washington DC: 1984.

<sup>101</sup> U. S. Department of Transportation, National Highway Traffic Safety Administration. *Benefits of Safety Belts and Motorcycle Helmets - Report to Congress February 1996*. DOT HS 808 347. 1996.

<sup>102</sup> Kahane CJ. *An Evaluation of Child Passenger Safety. The Effectiveness and Benefits of Safety Seats (Summary)*. Washington DC: National Highway Traffic Safety Administration. DOT HS 806-889. 1996.

## Motorcycles

Motorcycles are less stable and less visible than cars, and they have high performance capabilities. For these and other reasons, motorcycles are more likely than cars to be in crashes. When motorcycles crash, their riders lack the protection of an enclosed vehicle, so they are more likely to be injured or killed. Per mile traveled, the number of deaths on motorcycles is about 16 times the number in cars.<sup>104</sup> Death rates from head injuries are twice as high among motorcyclists in states with no helmet laws or in states, such as Connecticut, whose law applies only to young riders, than in states with laws that apply to all motorcyclists.<sup>105</sup> Helmets are about 29% effective in preventing motorcycle deaths and about 67% effective in preventing brain injuries.<sup>106,107</sup>

### Intervention Strategies

- Promote the use of safety belts, child safety seats, and bicycle and motorcycle helmets. Incorporate education on the correct use of child safety seats, safety belts, and helmets into well child and preventive health visits.
- Promote increased enforcement of existing laws concerning the legal drinking age, “zero tolerance” for drivers under age 21, speed limits, and driving under the influence of alcohol.
- Conduct high visibility public awareness campaigns to complement law enforcement campaigns.
- Improve driver screening and training programs.
- Pass universal age requirements for bicycle and motorcycle helmets.
- Lower the current legal standard for driving under the influence (DUI) from 0.10% blood alcohol concentration (BAC) to 0.08% BAC.
- Conduct sobriety checkpoints as a deterrent for DUI.
- Identify and refer chronic DUI offenders to alcohol/drug abuse treatment programs .
- Promote community-based programs that teach pedestrian and bike safety skills and educate drivers to be aware of pedestrians and bicyclists.
- Make low-cost or free bike helmets and child safety seats available to low-income families.
- Conduct risk assessments to identify roadway hazards.
- Enhance emergency medical services (EMS) and trauma systems to reduce deaths and disability related to motor vehicle accidents.
- Link police accident data with hospital records, EMS records, and other medical records, to better understand the contributing factors in motor vehicle crashes.

## DROWNINGS

### Summary

Drownings account for 1 in 20 unintentional injury deaths. From 1989 to 1994, there were an average of 41 drownings annually among Connecticut residents. The Connecticut age-adjusted death rate for drowning was 0.9 per 100,000 population<sup>108</sup> which surpassed the *Healthy People 2000* objective of 1.0 deaths per 100,000.

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<sup>103</sup> U. S. Department of Transportation, National Highway Traffic Safety Administration. *Traffic Safety Facts 1995*. 1996.

<sup>104</sup> U. S. Department of Transportation, National Highway Traffic Safety Administration. *Traffic Safety Facts - Motorcycles 1995*. 1996.

<sup>105</sup> Sosin DM, Sacks J, Holmgren P. Head injury-associated deaths from motorcycle crashes: Relationship to helmet-use laws. *Journal of the American Medical Association*. 1990; 264:2395-2399.

<sup>106</sup> Wilson D. *The Effectiveness of Motorcycle Helmets in Preventing Fatalities*. DOT publication number DOT HS 807 416 National Highway Traffic Safety Administration Technical Report. 1989 March.

<sup>107</sup> U. S. Department of Transportation, National Highway Traffic Safety Administration. *Benefits of Safety Belts and Motorcycle Helmets*.

<sup>108</sup> Mortality rates adjusted to the 1940 standard million. Note that the count of death found in WONDER for 1994 is 39 (compared to 28 for vital records) which yields an AAMR of 1.2 which does not meet the CT 2000 objective.

Drowning, by definition, is fatal. Additionally, a relatively high proportion of all submersion-related injuries are fatal. In cases of “near drownings” an individual is under water long enough to suffer the consequences of oxygen deprivation, which can lead to brain damage. The number of potential drownings in which persons are rescued without serious medical consequences is unknown, but is believed to be substantial.

### Time Trends

The number of deaths in Connecticut due to unintentional drownings declined between 1989 and 1994 (Figure 3-46). Most of the decline is attributable to a decline in male drowning deaths.

### High Risk Groups

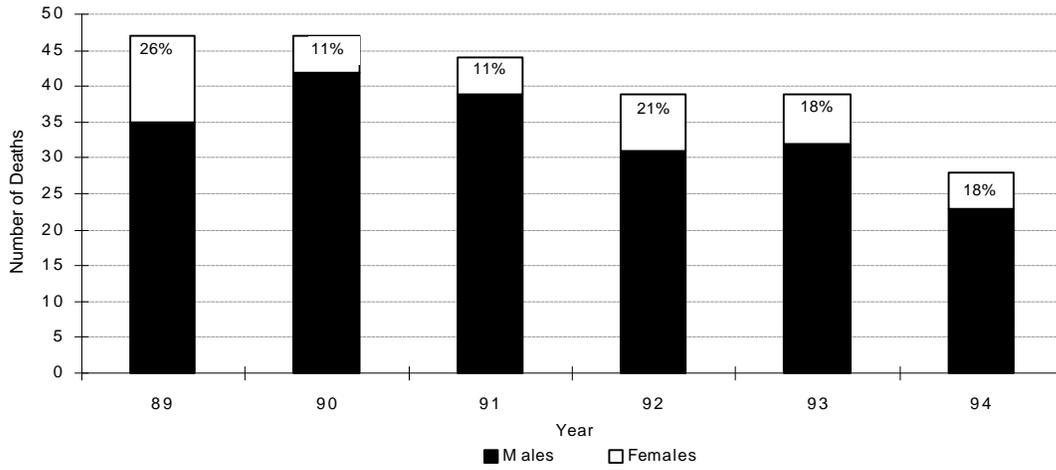
Persons of all ages are at risk of drowning in open water sites, such as lakes, rivers, and oceans, and also in incidents related to boating and other water craft (Figure 3-47). Children may drown in as little as one or two inches of water, and are therefore at risk of drowning even in wading pools, bathtubs, toilets, and hot tubs.

Drowning victims are roughly five times more likely to be males than females. Adolescent and young adult males as well as black males of all ages are particularly at risk. Although Connecticut surpassed the *Healthy People 2000* objective for overall drowning deaths, 1994 drowning rates for males aged 15 to 34 and for black males fell short of the national objective.

### Modifiable Risk Factors and Intervention Strategies

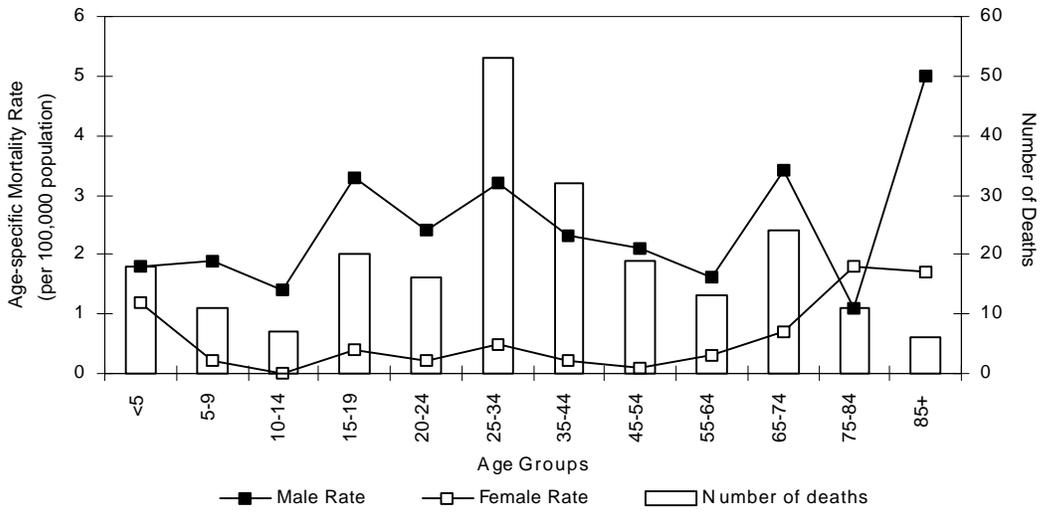
- Promote and require the use of personal flotation devices for all boaters.
- Promote swimming and water safety classes for children and adolescents.
- Promote cardio-pulmonary resuscitation (CPR) training for adults and adolescents.
- Require fencing and safety equipment for swimming pools.
- Conduct public education/awareness campaigns for boating safety.
- Promote boat safety training for boat operators.
- Enforce laws prohibiting under-age drinking.
- Enforce laws prohibiting operating boats under the influence of drugs and alcohol.
- Provide education for parents and caregivers on the importance of supervision of young children near any amount of water inside and outside the home, including bathtubs, buckets, and backyard pools including baby pools.

**Figure 3-46**  
**Unintentional Drownings**  
**Connecticut, 1989-94**



Source: DPH, OPPE

**Figure 3-47**  
**Unintentional Drownings**  
**Age-specific Mortality Rates**  
**Connecticut, 1988-92**



Source: CDC, Wonder Data Base

## INTENTIONAL INJURIES

*Intentional injury* encompasses injuries and deaths that are self-inflicted or perpetrated by another person. In Connecticut, homicide and suicide constitute the third leading cause of years of potential life lost before age 65.<sup>109</sup> Between 1988 and 1992, homicide and suicide were responsible for one-quarter of the deaths to Connecticut residents between the ages of 1 and 24 years, and were the second and third leading causes of death in this age group.<sup>110</sup> In 1995, 474 Connecticut resident deaths were caused by suicide and homicide. In 1996, 28 domestic violence homicides (60% women and 25% children), 755 rapes, and 7,012 aggravated assaults were reported to the police.<sup>111</sup>

In 1995, 2,134 hospitalizations of Connecticut residents were reported for self-inflicted injury and 3,340 for assault.<sup>112</sup> Domestic violence is the leading cause of injury to women in the U.S.<sup>113</sup> A total of 13,039 Connecticut females, aged 16 and older, reported domestic physical abuse to the police during 1996.<sup>114</sup> The comprehensive cost (monetary cost plus quality of life cost) of murder, rape, and assault in Connecticut in 1992 was estimated at \$2.9 billion, including nearly \$90 million in medical and mental health care.<sup>115</sup>

The categories of intentional injuries discussed here include suicide and attempted suicide, homicide and injuries due to assault, domestic violence, and deaths and injuries due to firearms.

## SUICIDE AND SUICIDE ATTEMPTS

### Summary

Suicide accounts for one-fifth of all injury deaths in Connecticut. In 1994, 320 residents took their own lives. This is slightly fewer deaths than those due to motor vehicles, but 50% more deaths than by homicide. Although suicide ranks eleventh as a cause of death in Connecticut, it ranks sixth in terms of premature deaths, reflecting the younger average age of suicide victims as compared to persons who die of other causes. Connecticut's 1994 age adjusted-suicide rate of 9.1 per 100,000 is about 20% lower than the U.S. rate, but falls far short of the *Healthy Connecticut 2000* target rate of 6.7 per 100,000.<sup>116</sup>

Experts agree that the number of suicides is undercounted. The extent of underreporting is unknown, but is estimated at 25%-50%. It is estimated that suicide attempts are eight times more common than completed suicides. Individuals who complete suicide are most likely to be male, while those who survive a suicide attempt are most likely to be female.

### Methods

Nearly half of Connecticut suicides were performed with a firearm. Hangings and carbon monoxide poisoning, specifically motor vehicle exhaust, accounted for one-fourth and one-fifth of the suicides respectively. The method used for suicide varies by gender (Figure 3-48). While firearms were the most

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<sup>109</sup> U. S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention. *1997 Connecticut State Health Profile*. 1997.

<sup>110</sup> Connecticut Department of Public Health. *Preventive Health and Health Services Block Grant Annual Report*. 1997 January.

<sup>111</sup> Connecticut Department of Public Safety, Division of State Police. *Crime in Connecticut, 1996 Annual Report*. Uniform Crime Reports. 1997.

<sup>112</sup> Office of Health Care Access.

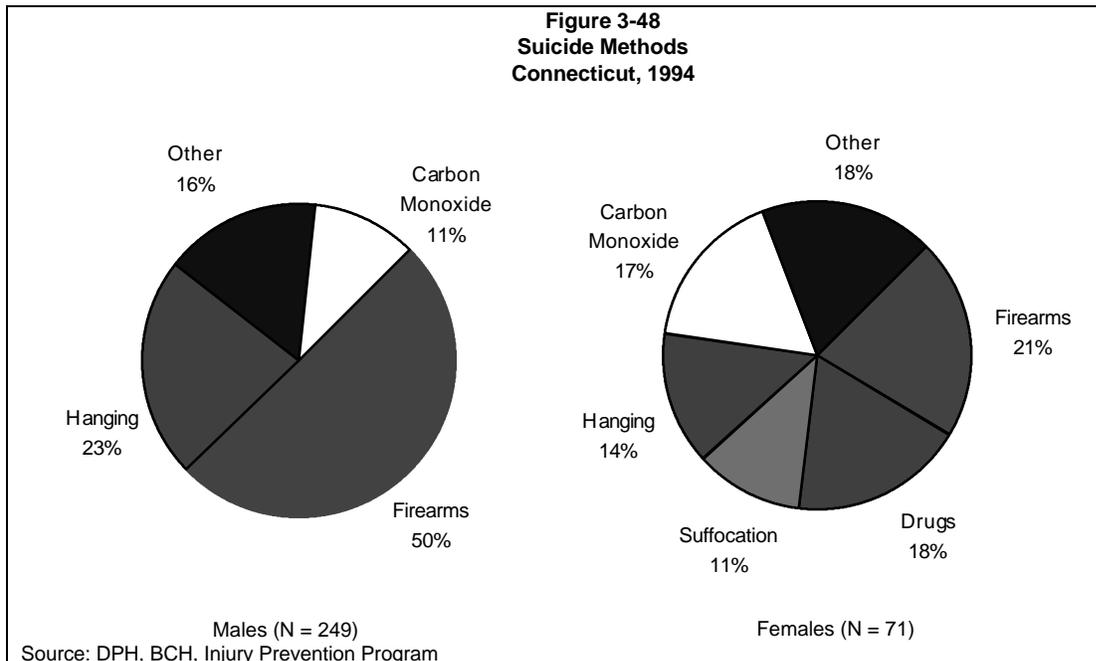
<sup>113</sup> The National Center for Education in Maternal and Child Health, Children's Safety Network. *Building Safe Communities, State and Local Strategies for Preventing Injury and Violence*. 1994.

<sup>114</sup> Connecticut Department of Public Safety.

<sup>115</sup> National Public Services Research Institute, Children's Safety Network Economics and Insurance Resource Center. Landover, MD. 1994.

<sup>116</sup> Connecticut Department of Public Health. *Healthy Connecticut 2000 Baseline Assessment Report*. Hartford, CT. 1994. Objective 7.2.

common method used for both sexes, they were used in half of all male suicides, but only 21% of female suicides.



### High Risk Subgroups

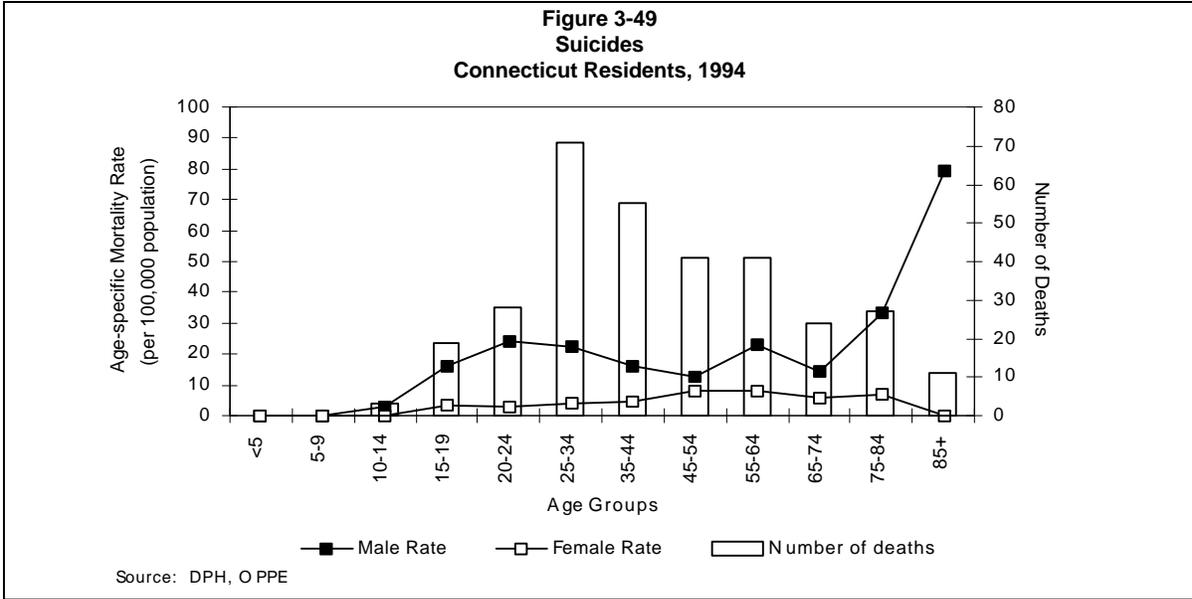
In 1994, three and one half times as many males as females committed suicide. While the highest rate of suicide was found among elderly white males, half the suicides in the State were to males between the ages of 15 and 54 (Figure 3-49). The suicide rate for whites in Connecticut was double the rate for blacks. The results of a 1995 survey of high school students found that 24% of Connecticut high school students had seriously considered suicide in the past year.<sup>117</sup>

### Time Trends

The overall rate of death due to suicide remained fairly steady in Connecticut from 1984 to 1994. Recent cohort studies cited by the CDC indicate that the rate of suicide among youth in the U.S. is higher than the rates of their grandparents at a similar age. National data also show an increase in suicides among blacks, especially young adult black males.<sup>118</sup>

<sup>117</sup> Connecticut State Department of Education. *Youth Risk Behavior Survey Report*. 1995.

<sup>118</sup> Kachur SP, Potter LB, James SP, Powell KE. *Suicide in the United States, 1980-1992*. Atlanta, GA: DHHS, PHS, Centers for Disease Control and Prevention, National Center for Injury Prevention and Control. 1995: Violence Surveillance Summary Series, No. 1.



### Modifiable Risk Factors and Potential for Intervention

Risk factors for suicide in the groups with the highest rates are generally considered to have more differences than similarities. Among older people, identified risk factors include social isolation, alcohol abuse, depression, increased mental and physical illnesses, and easier access to firearms. For youths, risk factors include the suicide of a friend, hopelessness, and intoxication and rage combined with an available method and privacy. Common warning signs include talking about not wanting to live, a feeling of hopelessness, giving possessions away, abuse of alcohol and/or drugs, depression, low school grades, concern about sexual identity or homosexuality, and loss of a significant other because of the break-up of a relationship, death, or divorce.

Intervention strategies for youth suicide prevention include those that directly affect known or suspected risk factors, programs that increase the recognition of suicide warning signs, and appropriate and timely referral to resources. Recommended interventions aimed at preventing suicide among the elderly include senior peer counseling programs, efforts that target high-risk persons, improving mental health services through suicide prevention centers, and programs that increase awareness of risk factors among those who have frequent contact with seniors.

## HOMICIDE AND INJURY DUE TO ASSAULT

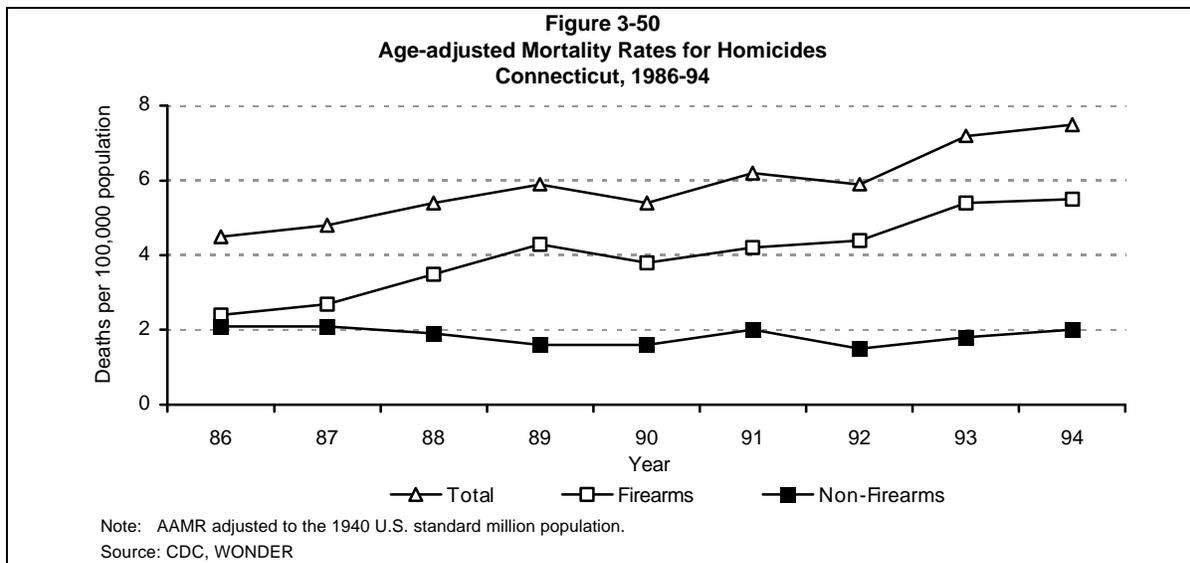
### Summary

In 1994, an average of four Connecticut residents died each week from homicide. Firearms were used in seven out of ten of these homicide deaths. Although Connecticut's homicide rate of 7.5 per 100,000<sup>119</sup> was lower than the U.S. rate of 10.1 per 100,000, the state rate was considerably higher than the *Healthy Connecticut 2000* objective of 5.0 deaths per 100,000.<sup>120</sup>

Clearly, not all assaults result in death. In Connecticut, there are nearly six times as many hospitalizations for assault-related injuries as deaths.<sup>121</sup> Police crime reports track aggravated assaults, those assaults that involve the use or attempted use of a dangerous weapon likely to produce death or great harm. In 1996, there were 7,012 aggravated assaults reported to police.<sup>122</sup>

### Time Trends

Connecticut's age-adjusted mortality rate for homicides nearly doubled from 1986 to 1994 (Figure 3-50). Virtually all of this increase was due to the increase in firearm homicides. The increased use of firearms has increased the lethality of arguments that previously might have resulted only in treatable injuries. During the same period, the rate of death due to non-firearm homicides remained steady. By contrast, the aggravated assault rate decreased 63% from 1990 to 1995.



<sup>119</sup> Mortality rate age adjusted to 1940 U.S. standard million.

<sup>120</sup> Connecticut Department of Public Health. *Healthy Connecticut 2000*. Objective 7.1.

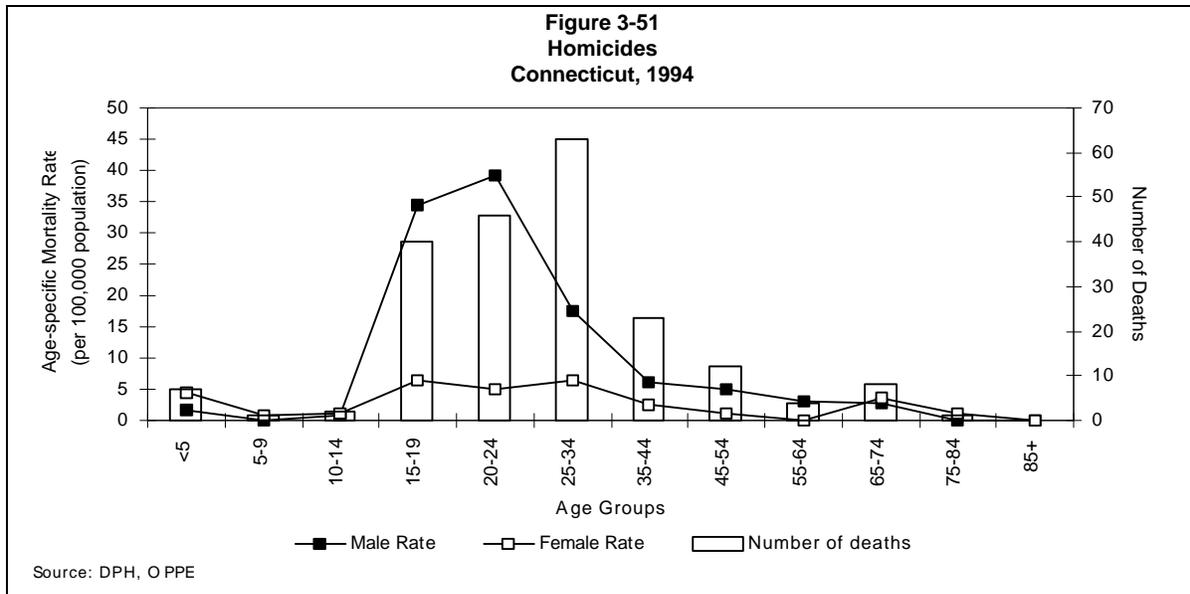
<sup>121</sup> Office of Health Care Access.

<sup>122</sup> Connecticut Department of Public Safety.

## High Risk Subgroups

Differences by sex and race are much more pronounced for homicide than for deaths due to many other causes. Three times more males than females die from homicide. During 1994, those in the 15 - 34 age group accounted for the highest number of deaths (Figure 3-51). In 1994, 44% of the State's homicide victims were black and 27% were Hispanic, even though blacks comprise 8.3% and Hispanics 6.5% of the state's population.<sup>123</sup> In Connecticut, homicide was the thirteenth leading cause of death overall, but among black males it ranked fourth. This excess was most pronounced among black males between the ages of 15 and 34. Although black males between the ages of 15 and 34 years old accounted for 1.5% of the State's population, they accounted for 30% of Connecticut's homicide victims.

Other populations at risk include young children and women. Seven Connecticut children under the age of five were killed in 1994 by injuries intentionally inflicted by another person. Of almost 16,400 victims of family violence reported to police in 1996, 80% were female.<sup>124</sup> The Family Violence Victim Advocate Program received 29,388 court referred requests for services for victims of domestic violence in 1996.



<sup>123</sup> U. S. Department of Commerce, Economics and Statistics Administration, Bureau of the Census. *1990 Census of Population - Social and Economic Characteristics Connecticut*. Washington DC. 1993 September.

<sup>124</sup> Connecticut Department of Public Safety.

## Modifiable Risk Factors and Potential for Intervention

Forty to sixty-seven percent of homicides occur between people who know each other, whether they are family members or other acquaintances. Arguments and fights, precipitated by anger, have been identified as precursors to many homicides.<sup>125</sup> A 1995 survey of 944 Connecticut high school students found that 38% of them reported being in a physical fight in the past year.<sup>126</sup> The prevention of homicides among spouses and intimates is directly linked to the prevention of physical and emotional abuse, especially as directed toward women. Scientific studies have shown a correlation between homicide deaths and lower socioeconomic status, alcohol use, and access to weapons.<sup>127</sup>

Several high-risk behaviors increase the likelihood that children and youth might become involved in violent incidents. These include consistently choosing physical fighting as a way to settle a conflict, low achievement in school leading to failure or dropping out, and the use of alcohol or drugs. Identified risk factors include a history of psychological, physical or sexual abuse, lower socioeconomic status with its resultant stresses, racism, frequent moves, recent relocation, immigrant status, living in overcrowded conditions, and emotional or physical disabilities that hamper the ability to learn or demonstrate non-violent ways of handling conflict.<sup>128</sup>

Children and youth typically model adult behavior. Interventions directed at decreasing adult violence in the home, community and media would therefore seem to be appropriate strategies for reducing youth violence as well. Successful interventions incorporate local needs and a sensitivity to the target population. They may include reducing the incidence of precursors, such as arguments and fighting, that can lead to violence, reducing the occurrence of abuse in high-risk situations, increasing the safety mechanisms of lethal weapons and eliminating unsupervised access to them by children and youths, and incorporating measures to improve socioeconomic status.

## DOMESTIC VIOLENCE

### Summary

Populations directly affected by domestic violence are women and children, but the cost to society in terms of indirect effects is staggering. Domestic violence is the leading cause of injury among women, and is linked to numerous other health care problems including depression, drug abuse, and suicide.<sup>129</sup> Nationally, at least 10 battered women are killed each day and almost one-quarter of women seen in emergency rooms have injuries related to domestic violence.<sup>130</sup> Connecticut's domestic violence issues are similar. In 1995, 8.9 per 1,000 couples or 12,229 females age 16 and older were victims of family violence that was reported to police.<sup>131</sup> The number of reported incidents represents a 2.5% increase compared to 1994.

Children who are victims of violence or witness violence in the home are more likely to be involved in violent behavior when they get older. Nationally, more than 3.3 million children are reported to have seen a parent assaulted or killed.<sup>132</sup> Child victims of abuse or neglect comprise at least 70% of men in the

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<sup>125</sup> Prothrow-Stith D. *Violence Prevention Curriculum for Adolescents*. Newton, MA: Education Development Center, Inc. 1987.

<sup>126</sup> Connecticut State Department of Education.

<sup>127</sup> Prothrow-Stith D. 1987.

<sup>128</sup> National Center for Injury Prevention and Control. *The Prevention of Youth Violence: A Framework for Community Action*. Atlanta, GA: 1993.

<sup>129</sup> The National Center for Education in Maternal and Child Health, Children's Safety Network. *Building Safe Communities, State and Local Strategies for Preventing Injury and Violence*. 1994.

<sup>130</sup> The National Center for Education in Maternal and Child Health, Children's Safety Network.

<sup>131</sup> Connecticut Department of Public Health. *Preventive Health and Health Services Block Grant Annual Report*. 1997 January.

<sup>132</sup> Charles Stewart Mott Foundation. *1994 Annual Report: A Fine Line, Losing American Youth to Violence*.

criminal justice system.<sup>133</sup> In 1996, 2,637 or 14% of Connecticut's children were directly involved in situations in which one or both adults in their homes were arrested for cases involving family violence. Another 6,000 or 32% of children were present in the home when a violent incident occurred, but were not directly involved in the family violence incident.<sup>134</sup>

Domestic violence is also frequently related to sexual assault. "Forty percent of battered women are also sexually assaulted by their partners".<sup>135</sup> But the problem may be more frequent, as it is estimated that at least 92% of rapes go unreported to criminal authorities and that at least 44% of women have been victims of attempted or completed sexual assault.<sup>136</sup> Twenty-two percent of college students and 10% of high school students have experienced physical violence in dating relationships.<sup>137</sup> According to Connecticut's 1995 Uniform Crime Report, there were 666 forcible rapes of females and 107 attempted rapes (a total of 773) reported to the police.<sup>138</sup> In Connecticut there were 1,084 rapes of women age 12 and over reported to the Connecticut Sexual Assault Crisis Center (CONNSACC) during SFY 1995-96.<sup>139</sup>

### Modifiable Risk Factors and Potential for Intervention

Public health agencies need to collaborate with social service, criminal justice, education, mental health, and other public and private agencies committed to assessment, intervention and elimination of the problem. In addition, strategies to intervene in the problem of domestic violence include:

- Provide education about "dating violence" and appropriate referral through school-based health centers and other school-based clinical and educational programs.
- Incorporate knowledge of risk factors of potential perpetrators into service provider education with the goal of targeted prevention and appropriate referral.
- Provide education and technical assistance to service providers in the installation and use of protocols to properly identify and refer battered women. Incorporate environmental modifications such as improved lighting and security on school campuses and in the community.
- Provide awareness activities that include information about the significant effect of domestic violence on children, that most perpetrators are known to the victims, and that domestic violence and rape are grossly underreported.
- Improve data collection to determine the incidence of the problem and successful strategies for intervention.

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<sup>133</sup> Charles Stewart Mott Foundation.

<sup>134</sup> Connecticut Department of Public Safety.

<sup>135</sup> The National Center for Education in Maternal and Child Health, Children's Safety Network.

<sup>136</sup> The National Center for Education in Maternal and Child Health, Children's Safety Network.

<sup>137</sup> The National Center for Education in Maternal and Child Health, Children's Safety Network.

<sup>138</sup> Connecticut Department of Public Safety.

<sup>139</sup> Connecticut Department of Public Health.

## DEATHS AND INJURIES DUE TO FIREARMS

### Summary

Firearms cause nearly one of every five injury deaths in Connecticut. In 1994, 293 Connecticut residents were shot to death; 49% of the firearms deaths were homicides, 48% were suicides and 3% resulted from unintentional shootings. Firearms cause approximately equal numbers of homicides and suicides (143 and 140, respectively), however, guns are used in a larger percentage of homicides than suicides (69% and 44%, respectively).

### High Risk Subgroups

In 1994, 87% of the firearms deaths in Connecticut occurred to males. In terms of racial disparity, the firearms mortality rate for blacks was four times higher than for whites. The risk of gun-related death was highest for the 15-24 age group, particularly males (Figure 3-52). The mortality rate increased again among elderly males. While two-thirds of firearm deaths to people between the ages of 15 to 24 were due to assault, suicide accounted for 89% of firearm deaths for those 55 years and older.

### Time Trends

Connecticut's firearms mortality rate is two-thirds the national rate, but both rates have risen steadily over time. Connecticut's rate increased more than 50% from 1985-1994; firearms deaths from homicides in Connecticut increased 162%, and suicides increased 23%, while unintentional deaths decreased 67%. The firearm death rate for blacks increased 91%, while the rate for whites increased 41%. For about the same time period, the AAMR overall and for homicide increased, but suicide and unintentional injury showed little variation (Figure 3-53). Although blacks in Connecticut were three times as likely as whites to die from a firearm in 1985, by 1994 the gap had widened such that blacks were four times as likely as whites to die from a gunshot wound.

### Modifiable Risk Factors and Potential for Intervention

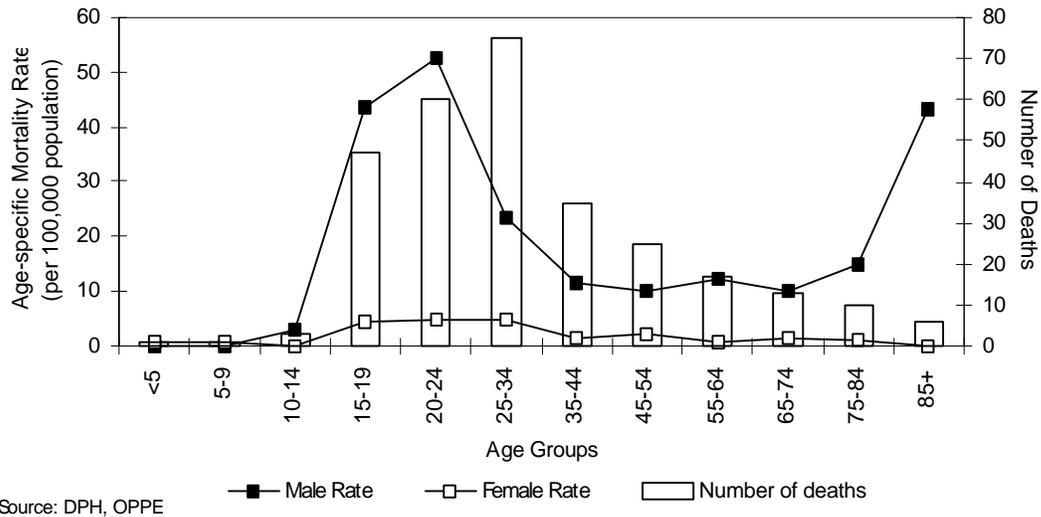
A gun at home is 43 times more likely to be used to kill a family member or friend than a criminal intruder.<sup>140</sup> People who have guns in their homes are at a much greater risk of suicide than people who do not keep guns in their home.<sup>141</sup> A suggested public health strategy is separate storage of firearms and ammunition to reduce access by children and youth. More information on modifiable risk factors is contained in the sections on suicide and homicide.

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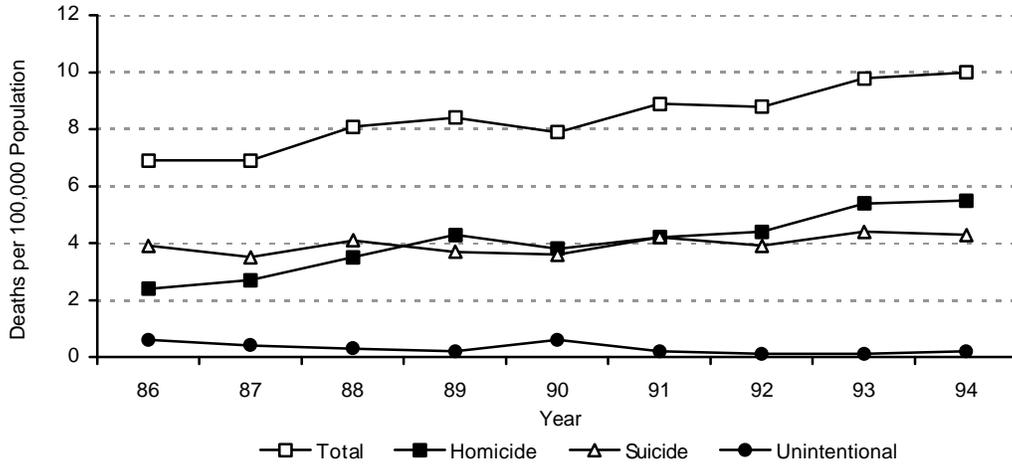
<sup>140</sup> Kellermann AL, Reay DT. Protection or peril? An analysis of firearm related deaths in the home. *New England Journal of Medicine*. 1986;314:1557-1560.

<sup>141</sup> Kellermann AL et al. Suicide in the home in relation to gun ownership. *New England Journal of Medicine*. 1992;327:467-472.

**Figure 3-52**  
Firearms Deaths  
Connecticut, 1994



**Figure 3-53**  
Firearms Deaths  
Age-adjusted Mortality Rates  
Connecticut, 1986-94



# INFECTIOUS DISEASES

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## HIGHLIGHTS

- In 1996, the rate of newly reported AIDS cases acquired from heterosexual contact surpassed the rate for those acquired from homosexual contact for the first time in Connecticut.
- The proportion of newly reported AIDS cases who are Hispanic has steadily been increasing in the 1990s.
- HIV seroprevalence in childbearing women decreased during the most recent four years, both overall and in urban areas; however it increased in non-urban areas.
- In 1996, the incidence of gonorrhea and chlamydia was the lowest ever reported in Connecticut, while the rate of primary and secondary syphilis increased for the first time since 1989.
- In 1996, tuberculosis incidence fell to the lowest rate ever reported in Connecticut (4.2 cases per 100,000 population), whereas the total number and percentage of new cases who were born outside the U.S. and its territories increased to the highest level ever, 50%.
- The overall percentage of 2 year old children in Connecticut who were fully immunized was 87% in 1996, the highest state-specific rate in the nation.
- In 1995, Connecticut had the highest reported rate of Lyme disease in the nation (47.1 cases per 100,000 population).
- Between 1991 and 1995 in the 5 years before a vaccine was licensed, varicella-related disease was annually responsible for 29 deaths, >700 hospitalizations, and more than \$11 million in hospital costs in Connecticut.
- Antibiotic-resistant strains of invasive pneumococcal disease are emerging, but there is a vaccine for the disease that is underutilized. The percentage of the elderly receiving the influenza vaccination exceeds the year 2000 target (60%), while the percentage receiving the pneumonia vaccination still fall short (37%).

## HIV/AIDS

### Summary

Acquired Immunodeficiency Syndrome (AIDS) is a life threatening state of immunodeficiency that is the usual end result of infection with the human immunodeficiency virus (HIV). Since the early 1980's, when AIDS was first recognized in Connecticut, surveillance efforts have targeted adults who develop AIDS and children who develop HIV infection and AIDS. In addition, the prevalence of HIV infection in women giving birth in Connecticut (see *Survey of Childbearing Women for HIV Infection* later in this chapter) and the mortality rates from AIDS have been used to help determine the magnitude and the impact of the HIV/AIDS epidemic.

There are signs that the AIDS epidemic in Connecticut has stabilized and could be decreasing somewhat. After a steady climb since the beginning of the epidemic, the Connecticut crude AIDS incidence rate by year of diagnosis remained stable in 1994 and 1995 (Figure 3-54). In addition, pediatric AIDS cases decreased for 3 consecutive years, and the HIV seroprevalence among childbearing women has also been decreasing. Finally, the death rate in persons with AIDS dropped for the first time ever in 1996.

In spite of the positive trends, the magnitude and epidemiology of AIDS continue to pose a major challenge to prevention. In 1995, AIDS was the leading cause of mortality for Connecticut residents aged 25-44 years, and overall, HIV infection was the seventh leading cause of death. One hundred fifty-nine of the 169 towns in Connecticut have had at least one AIDS case among their residents. While injection drug use remains the leading means of HIV transmission, heterosexual contact has become the next leading means of HIV transmission. Poor urban areas and race-ethnic minorities continue to be disproportionately affected, with persons of Hispanic ethnicity making up an increasing proportion of all new cases.

### Time Trends

AIDS incidence for both sexes has shown evidence of plateauing (Figure 3-54). However, the proportion of all cases that are female has steadily increased since the beginning of the epidemic. In 1996, 28% of all reported cases were in women. When examined by HIV transmission category, injection drug users (IDU) became the leading transmission category in the late 1980's and in 1996 accounted for more than 50% of all cases. The only transmission group that has shown a sustained drop in numbers in recent years is men who have sex with men (MSM) (Figure 3-55). Mortality among persons reported with AIDS<sup>142</sup> showed a decline in 1996 for the first time. This decline coincides with the widespread availability of protease inhibitors, a new class of potent anti-retroviral agents (Figure 3-56).

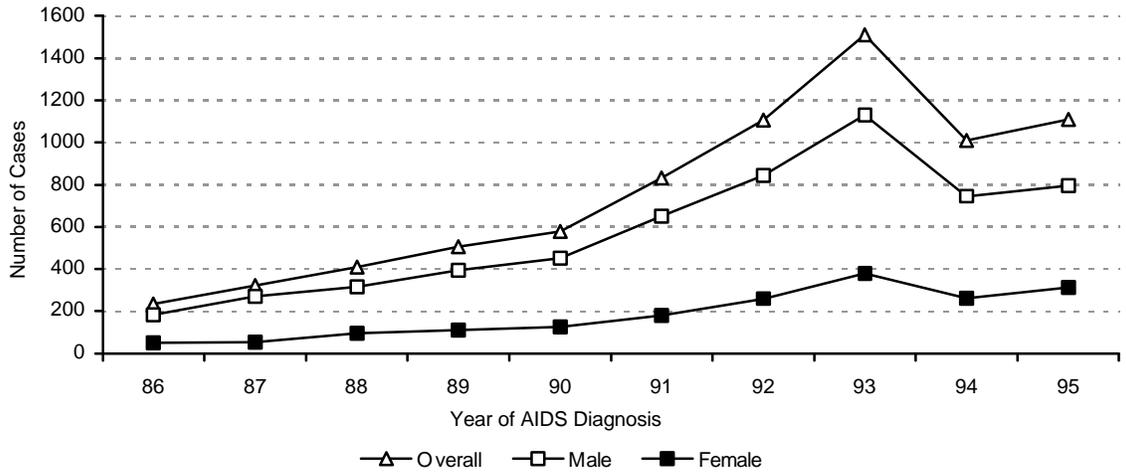
### High Risk Groups/Geographic Variation

High risk groups for AIDS include urban residents and racial/ethnic minorities. Through 1996, AIDS incidence in blacks has been 11.3 times higher than in non-Hispanic whites, and AIDS incidence in Hispanics 7.8 times higher. However, because they make up over 80% of the population of the state, whites have accounted for 36.5% of all cases, a close second to blacks (40.2%), and followed by Hispanics (21.9%). Compared to incidence in towns with less than 50,000 residents, AIDS incidence is 7.9 times higher in towns with at least 100,000 population and 2.1 times higher in towns with 50,000-99,999 population. Since AIDS was first reported in Connecticut, 59% of all AIDS cases have been residents of Hartford, New Haven, Bridgeport, Stamford and Waterbury.

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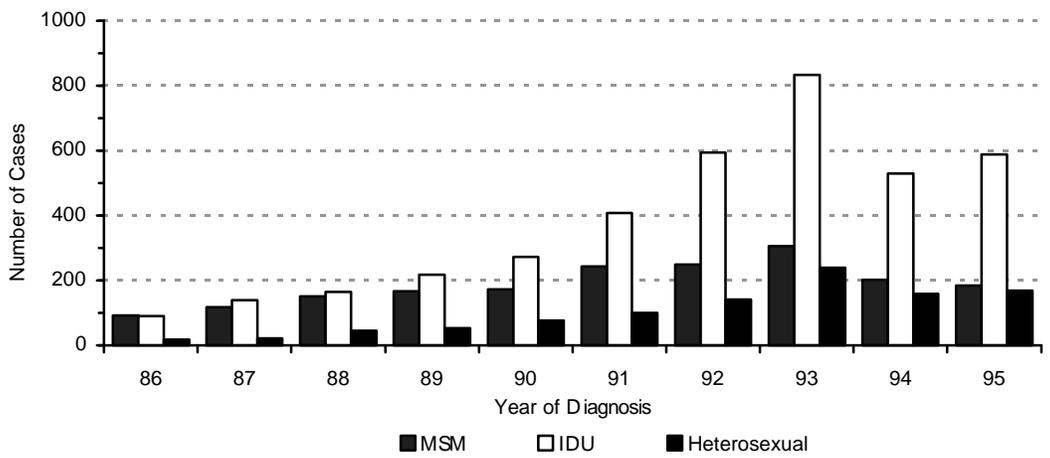
<sup>142</sup> The DPH AIDS Epidemiology program counts deaths to persons reported with AIDS, regardless of whether the cause of death was AIDS-related. In contrast, reporting of deaths in the DPH annual *Registration Report* is based on underlying causes of death as recorded on death certificates; hence, the *Registration Report* contains counts of deaths attributed specifically to HIV infection, including, but not limited to, persons with AIDS. The number of deaths due to HIV infection according to the *Registration Report* for a given year will thus be lower than the number of deaths to persons with AIDS, as reported by the DPH Epidemiology program, for the same year.

**Figure 3-54**  
**Crude AIDS Incidence by Year of Diagnosis**  
**Connecticut, 1986-95**

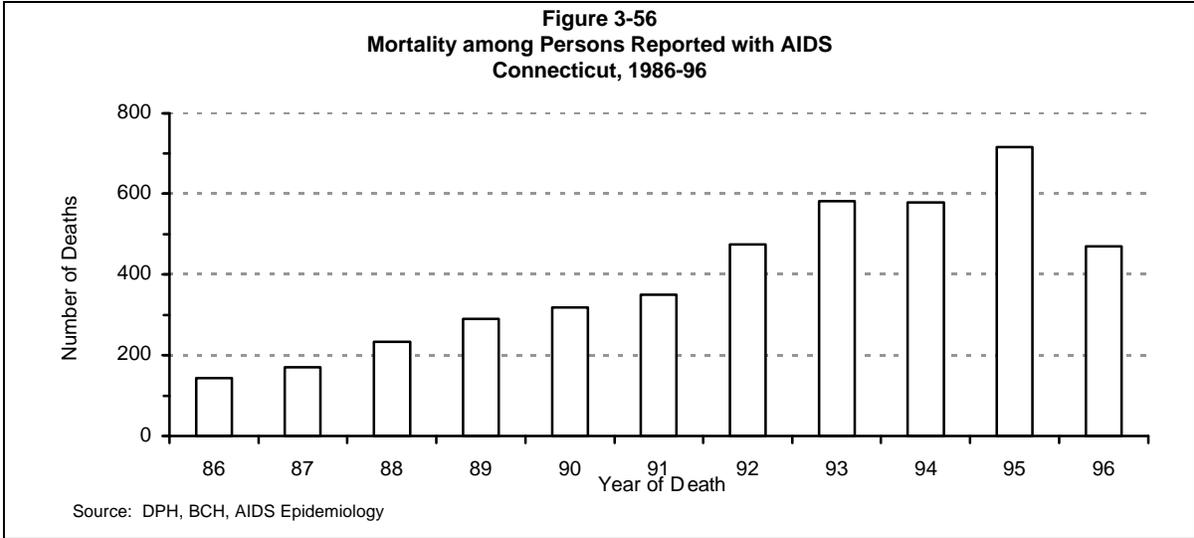


Source: DPH, BCH, AIDS Epidemiology

**Figure 3-55**  
**Time Trends in Diagnosed AIDS Cases by Transmission Category**  
**Connecticut, 1986-95**

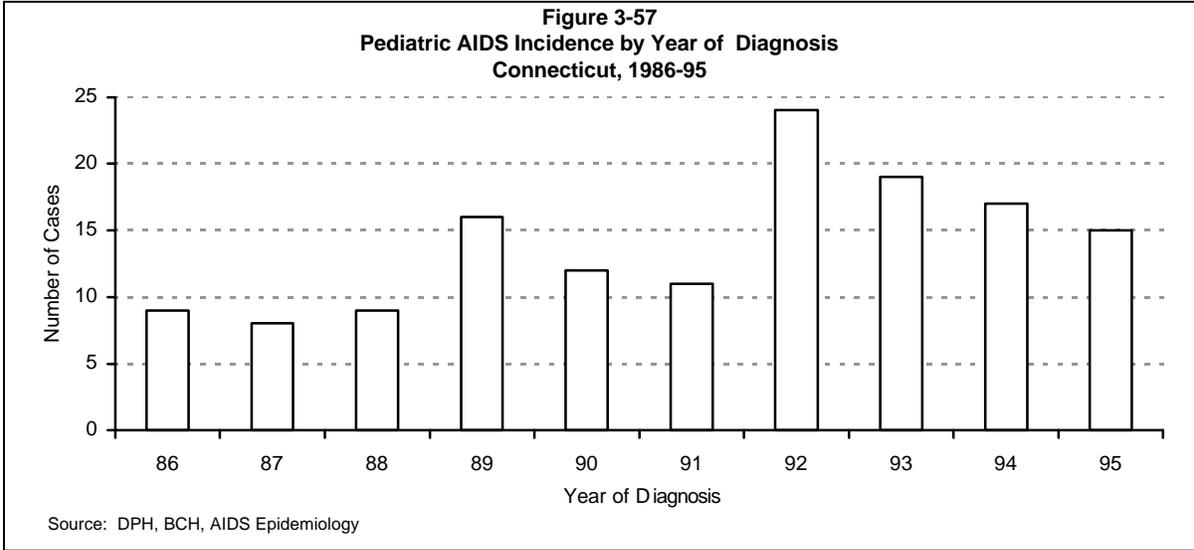


Note: MSM=Men who have sex with men; IDU=Injection drug user.  
 Source: DPH, BCH, AIDS Epidemiology



**Pediatric AIDS**

The number of pediatric AIDS cases peaked at 24 cases in 1991. Since then, incidence has been steadily decreasing, to only 15 cases diagnosed in 1995 (Figure 3-57). Groups of children most affected by AIDS include race-ethnic minorities (48% black, 31% Hispanic vs. only 11% white) and children living in urban areas (29% in Hartford and 21% in New Haven). It appears that the decline through 1995 was due in large part to the decline in the number of HIV-infected women giving birth in recent years. More recently, the use of zidovudine (AZT) prenatally and perinatally to prevent perinatal transmission of HIV may be a factor.



**SURVEY OF CHILDBEARING WOMEN FOR HIV INFECTION**

## Summary

An important component of HIV/AIDS surveillance is a serosurvey of all childbearing women for HIV infection. For the serosurvey, samples of blood taken from newborns for required genetic screening are blinded as to identity and tested for the presence of maternal antibody to HIV. The results reflect the magnitude of the HIV epidemic among women and related trends, and provide a direct measure of how many newborns are exposed to HIV each year. The sixth period of the Survey of Childbearing Women (SCBW) in Connecticut was completed in 1995. The first survey period began April 1, 1989 and ran for one year through March 31, 1990, and a new survey period commenced each year thereafter. For the sixth survey period (1994-95), 101 samples tested positive for HIV, with the prevalence for the period being 0.24%. This was the lowest percentage of births testing HIV positive since the survey began, and continued a downward trend which began in the fourth survey period (Table 3-25). Of the total tested (266,673), the number of infants born to HIV-infected mothers from April 1, 1989 through March 31, 1995 was 765 (0.29%).

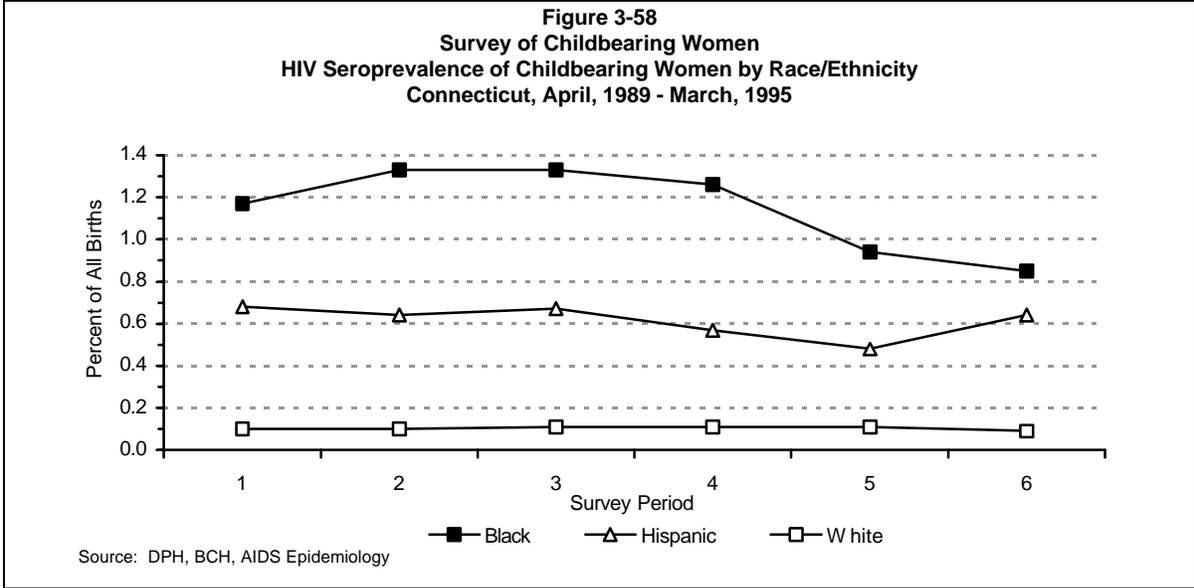
**Table 3-25**  
**Survey of Childbearing Women Summary**  
**Connecticut Residents, 1989-95**

Survey Period	Total No. Women Tested	HIV+ Women	Percent HIV+ Births
1 (4/89-3/90)	45,890	138	0.30
2 (4/90-3/91)	46,750	143	0.31
3 (4/91-3/92)	44,915	149	0.33
4 (4/92-3/93)	43,264	123	0.28
5 (4/93-3/94)	43,054	111	0.26
6 (4/94-3/95)	42,800	101	0.24

Source: DPH, BCH, AIDS Epidemiology

## High Risk Subgroups

The HIV seroprevalence (percentage positive) of childbearing women in Connecticut is associated with race/ethnicity, reflecting the state's race-specific AIDS case incidence rates. Black non-Hispanic women had the highest seroprevalence in all survey periods; however, a downward trend began in survey period 4 and continued through the latest. The seroprevalence for Hispanic women has been less than that for black non-Hispanic women, but greater than for white women. Seroprevalence among Hispanic women increased in the last survey period to its highest rate ever. The seroprevalence for white non-Hispanic women has been stable (Figure 3-58).



**Geographic Variation**

HIV seroprevalence in childbearing women has been highest in urban areas and in the three counties with the largest urban populations: Fairfield, Hartford, and New Haven. However, over time, the rate in these three counties has decreased while it has increased in the less urban counties (Table 3-26). This is consistent with AIDS surveillance data indicating that the HIV/AIDS epidemic is becoming more widespread.

**Table 3-26**  
**Survey of Childbearing Women**  
**Percentage of HIV+ Childbearing Women by County of Residence**  
**Connecticut, April, 1989 - March, 1995**

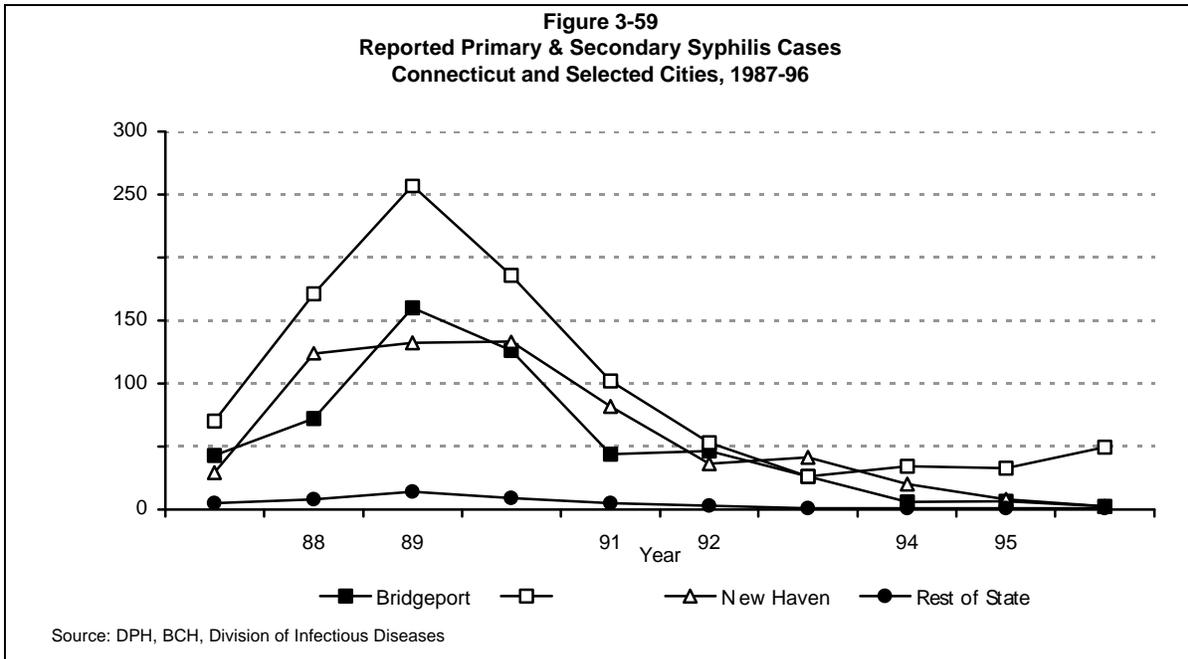
County	Survey Period					
	1	2	3	4	5	6
New Haven	0.43	0.39	0.52	0.36	0.33	0.26
Hartford	0.31	0.35	0.27	0.29	0.32	0.26
Fairfield	0.36	0.37	0.29	0.31	0.23	0.21
New London	0.17	0.19	0.26	0.33	0.18	0.15
Middlesex	0	0.15	0.21	0	0.11	0.16
Litchfield	0	0	0.23	0.18	0.15	0.36
Tolland	0	0	0.19	0	0.14	0.13
Windham	0.16	0	0.32	0.16	0.17	0.24

Source: DPH, BCH, AIDS Epidemiology

**PRIMARY AND SECONDARY SYPHILIS**

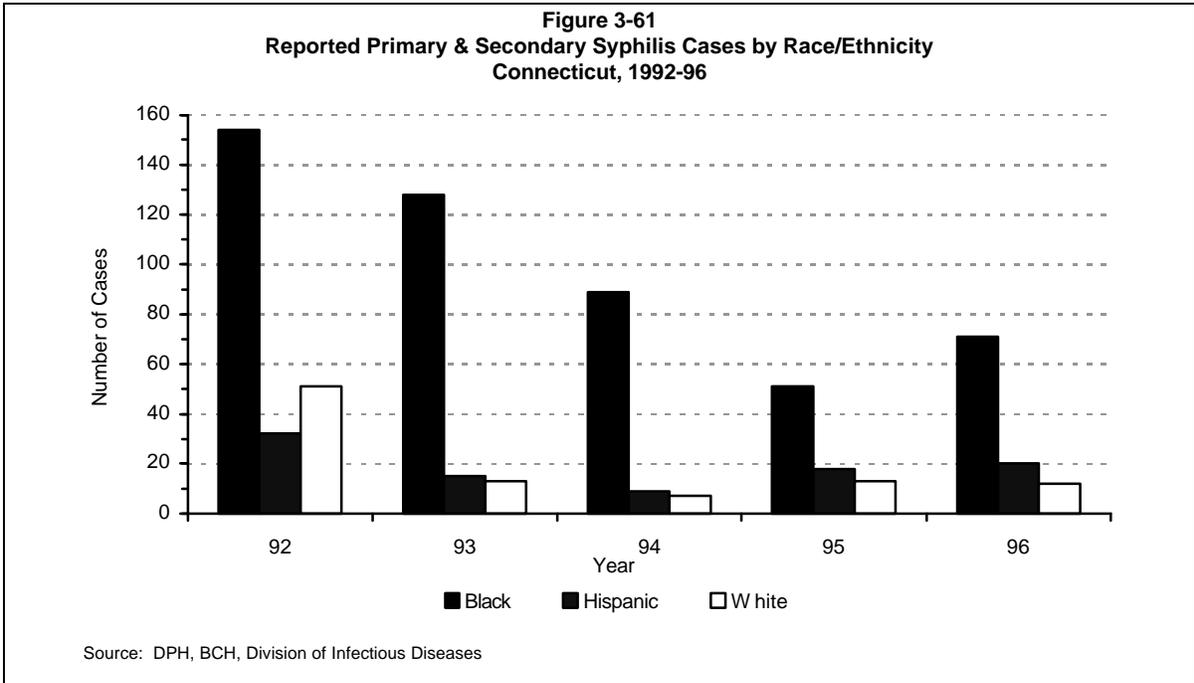
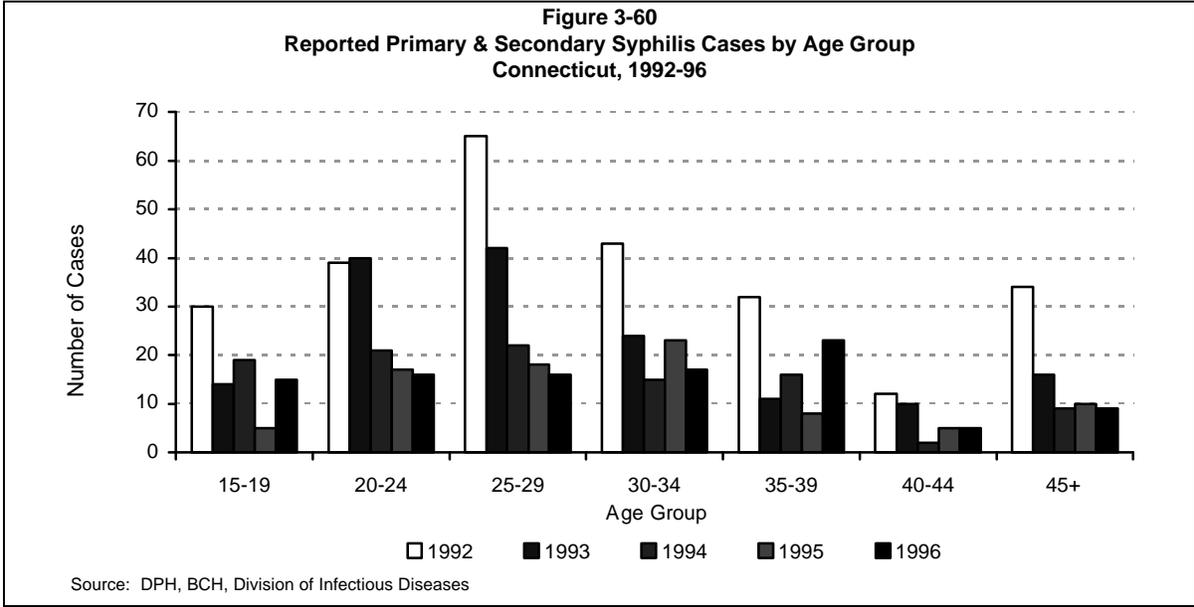
## Summary

In 1996, the rate of primary and secondary (P&S) syphilis for Connecticut was 3.2 cases per 100,000 population. The 103 total cases represented an increase of 20% from the 86 total cases reported in 1995, and was Connecticut's first increase in P&S syphilis since 1989. Between 1989 and 1995, P&S syphilis had fallen 92% from the 1989 high of 1,139 cases reported. Syphilis is most infectious during the primary and secondary stages, and often goes unnoticed or is misdiagnosed. Untreated, syphilis can eventually cause debilitating nervous system disorders and death in both infected adults and newborns. Furthermore, syphilis is a significant risk factor in acquiring and transmitting HIV through sexual contact.



## High Risk Subgroups

In 1996, P&S syphilis occurred most frequently in Hartford County residents (89 of 103 cases), and was rather evenly distributed among all age groups from 15-39 years of age (Figure 3-60). Formerly a problem in all of Connecticut's biggest cities, only Hartford had more than 5 cases (Figure 3-59). There were significant increases in P&S syphilis among the 15-19 year age group, and the 35-39 year age group, with those groups experiencing increases of 200% and 188% respectively. Blacks were most likely to acquire syphilis, and their rate of 25.9 cases per 100,000 population was 2.8 times higher than the rate in Hispanics (9.4/100,000) and 61.6 times higher than the rate in whites (0.4/100,000). Figure 3-61 shows the number of P&S syphilis cases by race/ethnicity.

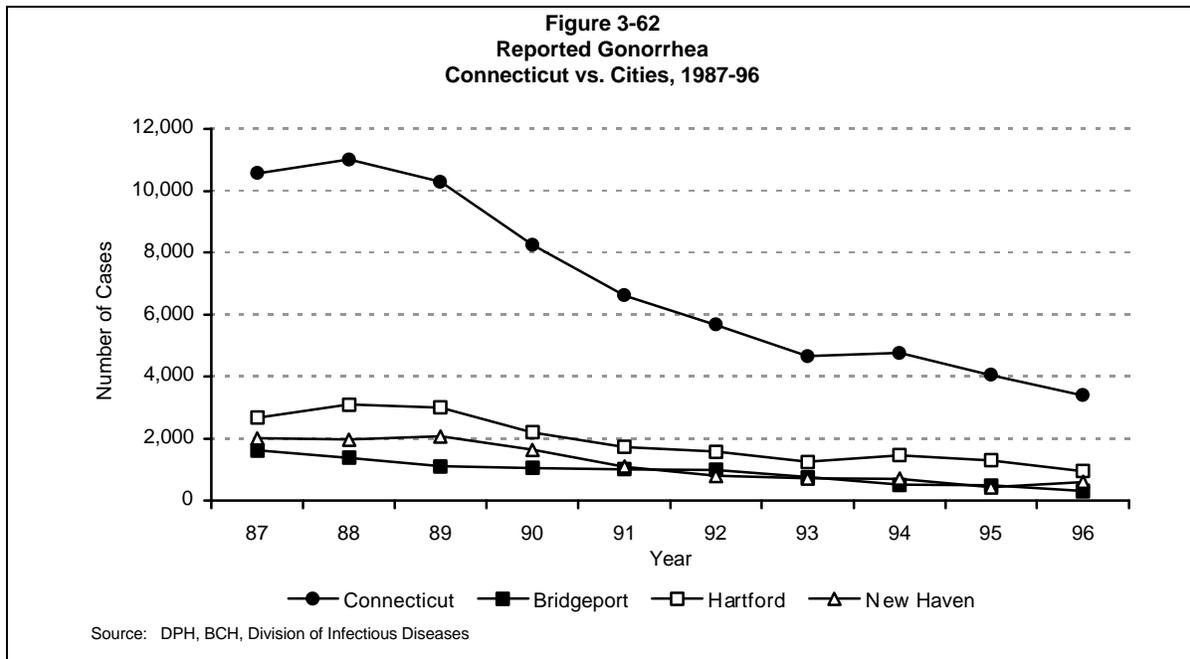


# GONORRHEA

## Summary

Gonorrhea is a bacterial, sexually-transmitted disease that is a major cause of pelvic inflammatory disease and infertility. Untreated infections can also predispose to HIV transmission. The rate of gonorrhea per 100,000 Connecticut residents in 1996 was 103. This represented a decrease of 17% from the rate of 124 in 1995, and was the lowest rate yet reported in Connecticut. The levels of gonorrhea declined in four of the state's five largest cities in 1996: 28% (1,312 to 950 cases) in Hartford; 35% (489 to 320 cases) in Bridgeport; 40% (348 to 210 cases) in Waterbury; and 10% (141 to 107 cases) in Stamford (Figure 3-62). In spite of the encouraging overall trend, several features of current gonorrhea occurrence are of concern. New Haven experienced a gonorrhea increase of 43% (423 to 607 cases) from 1995 to 1996. The reason for this increase has not been determined.

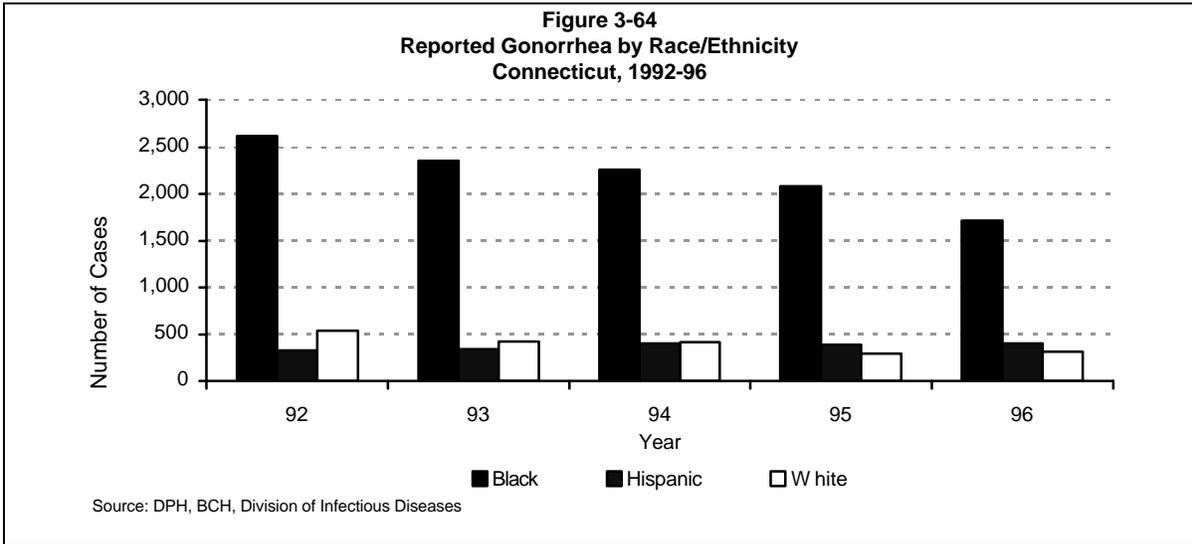
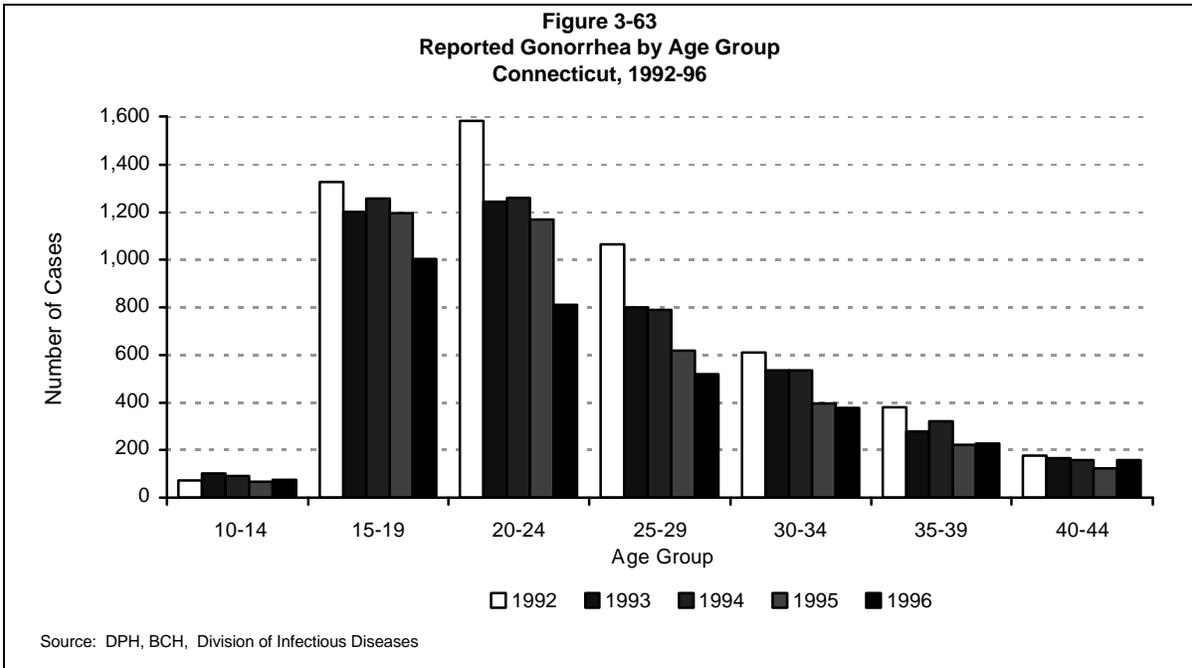
In addition to those discussed above, 36 cities in Connecticut reported more than five cases of gonorrhea in 1996, an increase of 14% from 1995 (31 cities).



## High Risk Subgroups

Gonorrhea has consistently been more prevalent in individuals between the ages of 15-24 years (Figure 3-63). Although the rate and number of cases among blacks continues to decline, in 1996 their rate of 864 cases per 100,000 was 3.3 times the rate<sup>143</sup> of 260 for Hispanics, and 58 times the rate of 15 for whites (Figure 3-64).

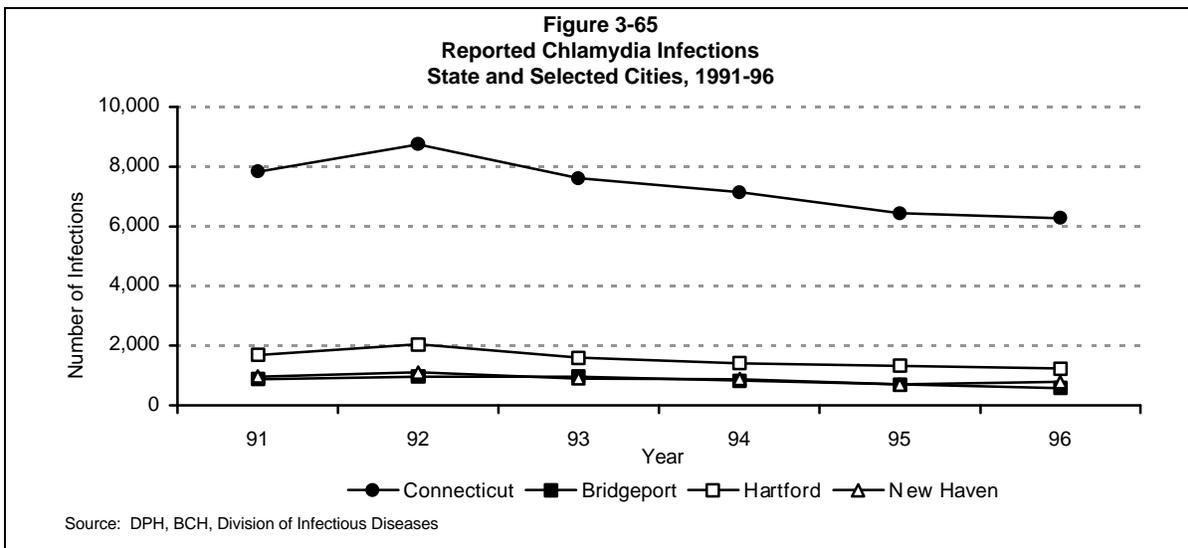
<sup>143</sup> Rates include data on cases where race/ethnicity was unknown. These data have been distributed among the three categories in proportion to known cases.



# CHLAMYDIA

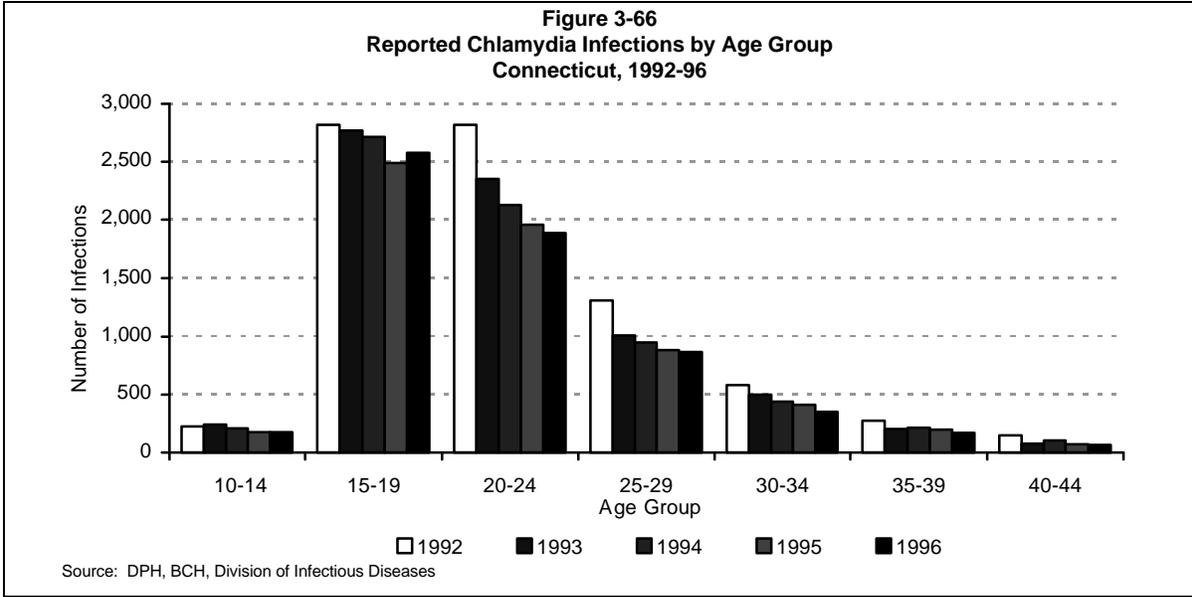
## Summary

Chlamydia is a sexually transmitted disease that, like gonorrhea, is a major cause of pelvic inflammatory disease and infertility in women. Untreated infection can also predispose to HIV infection. The chlamydia rate per 100,000 Connecticut residents fell to 191 in 1996. This marked a decrease of 3% from the rate of 197 per 100,000 in 1995, but is still well above the *Healthy People 2000* objective of 170 cases per 100,000 population. Chlamydia first became reportable in the state in July 1990, and has declined each year since its high of 8,748 cases reported in 1992 (Figure 3-65). In 1996, there were 6,269 total cases reported, of which 1,239 (20%) occurred in residents of Hartford. Other cities reporting high percentages of the state's morbidity were: New Haven, 13% (797 cases); Bridgeport, 9% (581 cases); Waterbury, 6% (393 cases); New Britain, 4% (255 cases); and Stamford, 3.5% (221 cases). No other city reported more than 200 cases. There were 373 cases for which the city of residence was not reported. Figure 3-65 shows the number of chlamydia infections for selected cities from 1991-1996. New Haven was the only one of the above named cities to experience an increase in chlamydia in 1996 (41% increase). There were 117 cities in Connecticut that reported 10 or fewer cases of chlamydia in 1996. Among women screened for chlamydia in family planning and correctional settings, the prevalence of infection decreased for the fifth consecutive year to 4.3% and 2.1%, respectively.

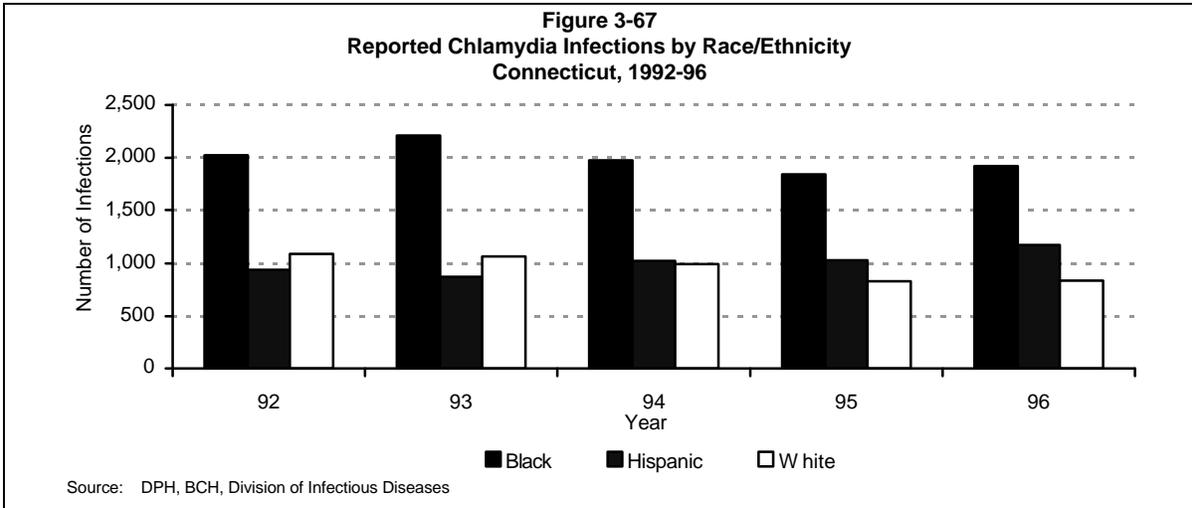


## High Risk Subgroups

In Connecticut, as in the rest of the United States, chlamydia occurs most frequently in individuals between the ages of 15 and 24 (Figure 3-66). In 1996, 85% of reported chlamydia infections were in women. This reflects efforts to screen and treat asymptomatic women for carriage of chlamydia before they suffer the consequences of chlamydia infection. The repercussions of untreated chlamydia are much more severe for women, and screening programs for women of child-bearing age are rapidly becoming more accessible throughout the state.



According to the CDC, up to 40% of women with untreated chlamydia will develop pelvic inflammatory disease (PID), and undiagnosed PID caused by chlamydia is believed to be common.<sup>144</sup> Of those with PID, 20% will become infertile; 18% will experience debilitating, chronic pelvic pain; and 9% will have a life-threatening tubal pregnancy. Tubal pregnancy is the leading cause of first-trimester, pregnancy-related deaths in African-American women.<sup>145</sup> Chlamydia may also result in adverse outcomes of pregnancy, including neonatal conjunctivitis and pneumonia. In addition, recent research has shown that women infected with chlamydia have a 3-5 fold increased risk of acquiring HIV, if exposed. Minorities bear the highest rates of chlamydia both in Connecticut (Figure 3-67) and across the United States.



## MEASLES

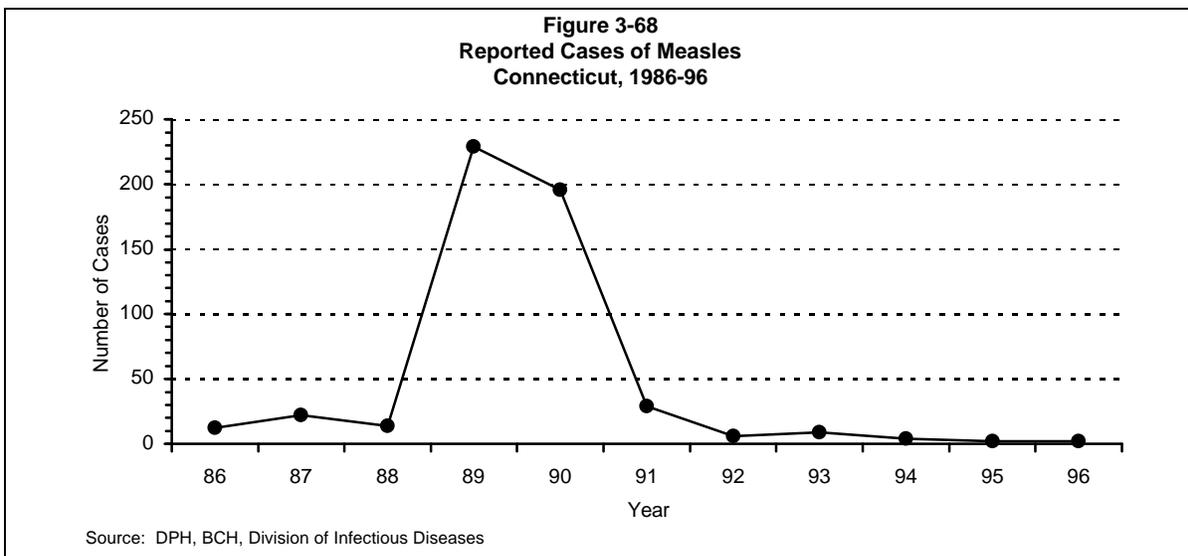
<sup>144</sup> Centers for Disease Control and Prevention. Recommendations for the prevention and management of *Chlamydia trachomatis* infections, 1993. *Morbidity and Mortality Weekly Report* 1993; 42(RR-12), 1-4.

<sup>145</sup> Centers for Disease Control and Prevention.; 1-4.

## Summary

Measles is a vaccine-preventable disease that is caused by a highly infectious virus. Complications of measles include pneumonia, encephalitis, and death. A national objective for the year 2000 is to reduce indigenous cases of measles to zero. Measles disease in Connecticut decreased dramatically from 1963 to 1968 as a result of licensure of the vaccine in 1963. While there were fluctuations in incidence of measles from 1968-1978, measles incidence never approached pre-vaccine era levels. In 1979, measles rates began to stabilize as states began adopting school immunization laws.

The incidence of measles was relatively low through the early to mid-1980s after declining from the previous decade. From 1980-1988, the number of reported measles cases was no more than 25 in any given year. The number of cases increased in 1989 and 1990 to a total of 424 and an annual average case rate of 6.5 cases per 100,000. This rate was more than 15 times higher than the annual average rates for measles in the previous 10 years in Connecticut and paralleled a similar increase nationally. A major factor underlying the increase was low immunization rates in pre-school children, particularly in urban areas. In 1991, the number of reported measles cases began to drop, and reached an all-time low in 1995 and 1996 of 2 cases per year (Figure 3-68).



## High Risk Subgroups

In 1989, measles incidence rates were highest in children ages 0-4 and 10-14 years old (Table 3-27). The distributions of cases by race/ethnicity were not equal, with rates highest in Hispanics (65 cases, 15.9 cases per 100,000) followed by whites and blacks (134 and 12 cases respectively, 4.6 cases per 100,000 each). In 1990, measles incidence rates continued to be highest in children ages 0-4 years old and adults in their 20s and 30s, especially among Hispanics.

**Table 3-27**  
**Measles Incidence Rate by Age Group**  
**Connecticut, 1989-90**

Age Group	1989		1990	
	Cases	Rate/100,000	Cases	Rate/100,000
0-4	61	26.3	63	28.6
5-9	23	10.7	17	7.3
10-14	51	26.3	10	5.2
15-19	33	13.2	10	4.1
20-24	21	7.5	37	13.9
25-29	18	6.2	23	8.1
30-39	10	1.7	33	6.3
40-49	8	1.7	2	.5
50-59	2	.6	1	.3
60+	2	.3	0	0
All Ages	229	6.8	196	5.9

Source: DPH, Infectious Diseases Division.

### Measures to Reduce Measles in Connecticut

In 1989, Connecticut DPH, in collaboration with the Connecticut Chapter of the American Academy of Pediatrics, recommended and began supplying a second dose of measles containing vaccine to persons at high risk of measles, including middle-junior high school and post-secondary school entrants. In 1989, the state passed a college immunization law that required college entrants to provide proof of receipt of two doses of measles, mumps, and rubella (MMR) vaccine. In 1991, school immunization regulations were modified to require two doses of measles containing vaccine for middle-junior high school entrants. Connecticut DPH currently receives funding from CDC to implement the Childhood Immunization Initiative program, which is designed to achieve and maintain high vaccination coverage levels among children in high-risk urban areas of the state during their first 2 years of life.

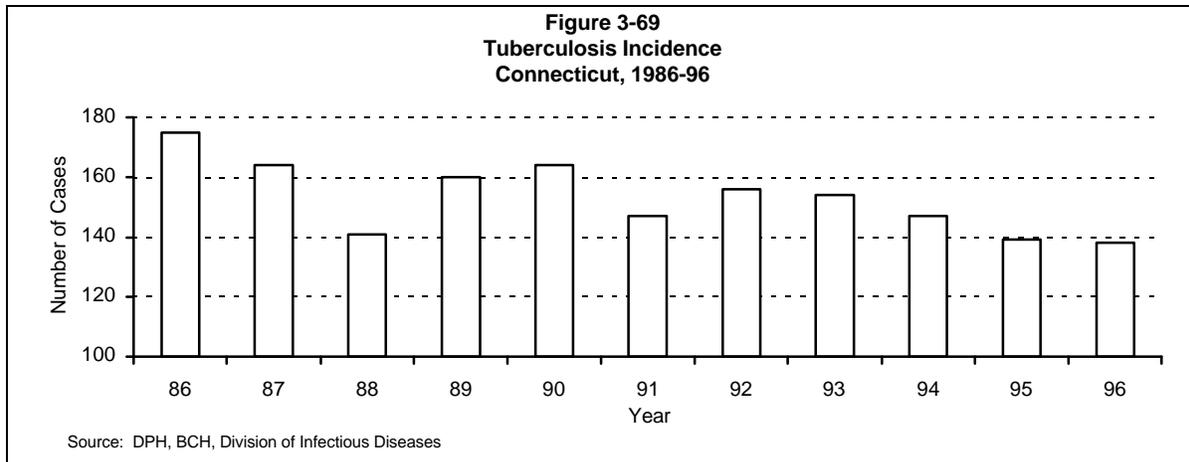
## TUBERCULOSIS

### Summary

Tuberculosis (TB) is a life threatening disease resulting from progressive infection with the tubercle bacillus. It is acquired by inhalation of tubercle bacilli coughed into the air by another person with active tuberculosis. Infection with TB can be latent (positive skin test, lifetime risk of activation) or can result in tuberculosis, which has a 50% case fatality rate if left untreated. Most cases of tuberculosis arise in persons who have had latent infection for a number of years. As both the disease and latent infection are treatable, tuberculosis has been targeted by the U. S. Public Health Service for elimination by the year 2010.

For calendar year 1996, 138 TB cases were reported in Connecticut; this was the lowest number ever reported and the fourth consecutive year of decrease. Since 1986, TB incidence has decreased at an annual average rate of 2% per year (Figure 3-69). Only one case of multi-drug-resistant tuberculosis was diagnosed in Connecticut in 1996. Only 9% of 1996 cases have been documented as having HIV co-infection, the lowest percentage since HIV-TB co-infection became reportable in 1991.

The decrease in TB and HIV-related TB is due primarily to aggressive prevention activities, in particular, more aggressive case management with directly observed therapy, more intensive contact investigations, screening and preventive treatment for HIV and TB co-infection in prisons and drug treatment programs, and TB screening and preventive treatment among refugees and immigrants.



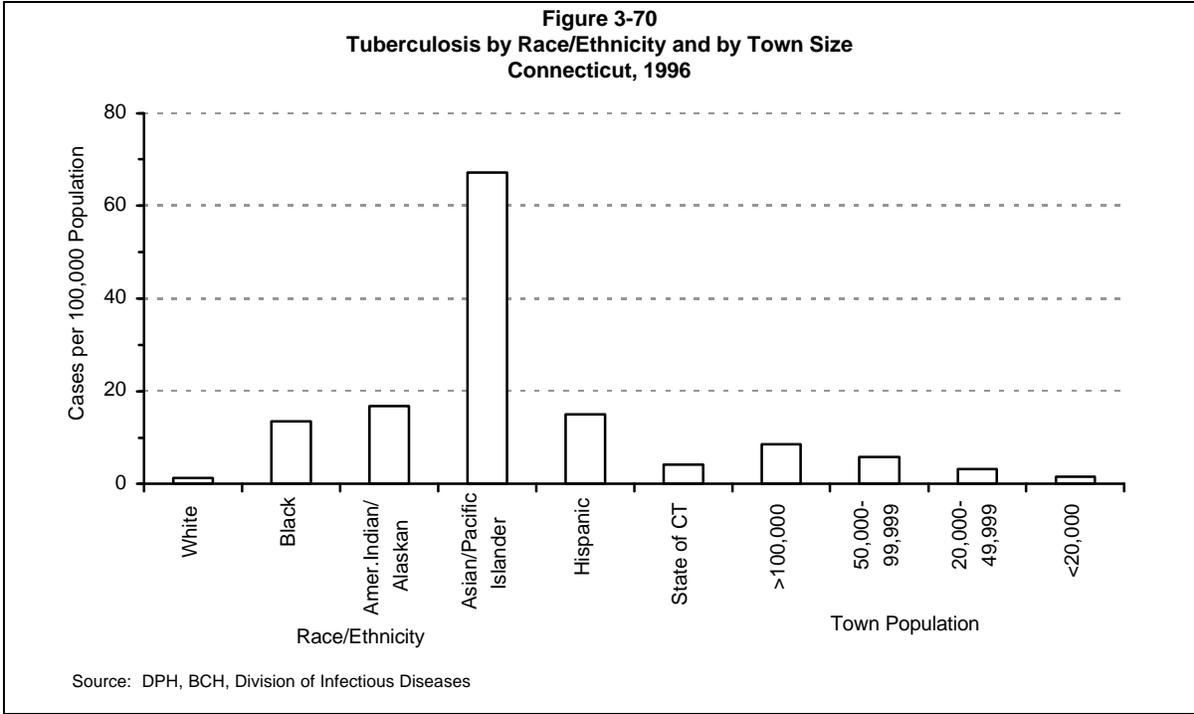
### TB/HIV Co-infections

HIV co-infection is one of the most reliable predictors that a person with latent TB infection will develop active TB disease. Because of this, the Council of State and Territorial Epidemiologists recommended in 1990 that states consider making TB/HIV co-infection reportable.<sup>146</sup> In August 1991, this condition was made reportable in Connecticut. Through 1996, 502 individuals with latent TB and HIV co-infection were reported. Almost half of the reports came from the Department of Correction, where screening of all new prison inmates has become routine. The remaining 287 co-infections were diagnosed as a result of systematic tuberculin skin test screening in other settings, including methadone maintenance programs. Most co-infections (343, 69%) have been reported from the five largest cities (over 100,000 population): Hartford (131, 26%), New Haven (74, 15%), Bridgeport (70, 14%), Stamford, and Waterbury (each 34, 7%).

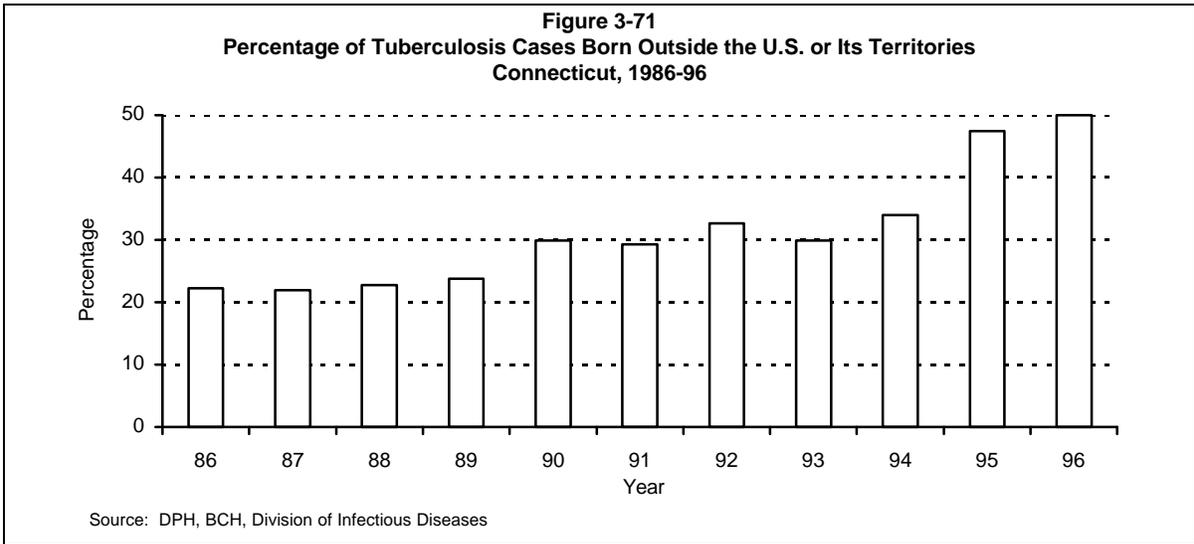
### High Risk Groups/Geographic Variation

High risk groups for TB in Connecticut include race-ethnic minorities, especially those of Asian and African origin, residents of urban areas, and persons born outside the US and its territories (Figure 3-70). Compared to whites, the risk of tuberculosis was more than 50 times higher in persons of Asian origin and 10 times higher in blacks and Hispanics in 1996. Compared to the incidence in the most rural parts of Connecticut (towns with less than 20,000 residents), residents of the five towns with populations of at least 100,000 were nearly six times more likely to develop TB.

<sup>146</sup> Council of State and Territorial Epidemiologists. *Position Statement No. 14: TB/HIV Surveillance and Control*. CSTE Annual Meeting, Bolton Landing, New York, April 8-12, 1990.



The incidence of TB in the foreign born and its proportional contribution to morbidity in Connecticut has risen steadily since 1980 (Figure 3-71). In 1995, Connecticut became one of eight states in which foreign-born TB incidence contributed at least 50% to annual incidence. This group has become high priority to develop meaningful early prevention initiatives.



## CHILDHOOD IMMUNIZATIONS

### Summary

A national health objective for the year 2000 is 90% immunization coverage for the basic primary immunization series by age two. The resurgence of measles among preschool aged children in Connecticut during 1989 and 1990 prompted a review of early childhood immunization levels in the state. Studies of both measles disease incidence and early childhood immunization rates completed in 1990-91 demonstrated that early childhood immunization coverage rates fell far short of the national objective<sup>147</sup> (Table 3-28). These studies revealed several reasons for under-immunization, including missed immunization opportunities, delayed starting of the immunization series, and inability of providers to track the immunization status of their clients. Since then, immunization levels of children reaching their second birthday have been monitored by annual retrospective surveys of school enterers and by the National Immunization Survey. As of 1995, early childhood immunization rates had improved to 85% completion by age 2 years. In addition, monitoring is now being done of children enrolled in Medicaid managed care.

### High Risk Subgroups

Vaccination levels are low among urban residents of the state, among children who have delayed initiation of vaccination, among children who have moved into an area after birth (in-migrants), and among those whose parents have other indicators of poor utilization of or poor access to health care.

**Table 3-28**  
**Percent of First Grade Children Immunized by Age 2 Years,**  
**by Vaccine and by Geographic Area**  
**Connecticut, 1990-91**

Vaccine <sup>a</sup>	Hartford (N = 666)	New Haven (N = 810)	Bridgeport (N = 773)	Non-urban (N = 671)	Connecticut (N = 817)
DTP-3	87.4%	91.0%	84.8%	94.9%	93%
DTP-4	59.2%	59.4%	48.7%	75.0%	72%
OPV-3	81.8%	81.8%	68.2%	88.1%	86%
MMR	78.1%	79.0%	70.4%	86.0%	85%
ALL(4DTP)	51.8%	53.3%	44.0%	65.7%	63%

<sup>a</sup>DTP-3 = 3 doses of diphtheria, tetanus, and pertussis vaccine (DTP). DTP-4 = 4 doses of DTP vaccine.

OPV-3 = 3 doses of polio vaccine. MMR = measles, mumps, and rubella vaccine.

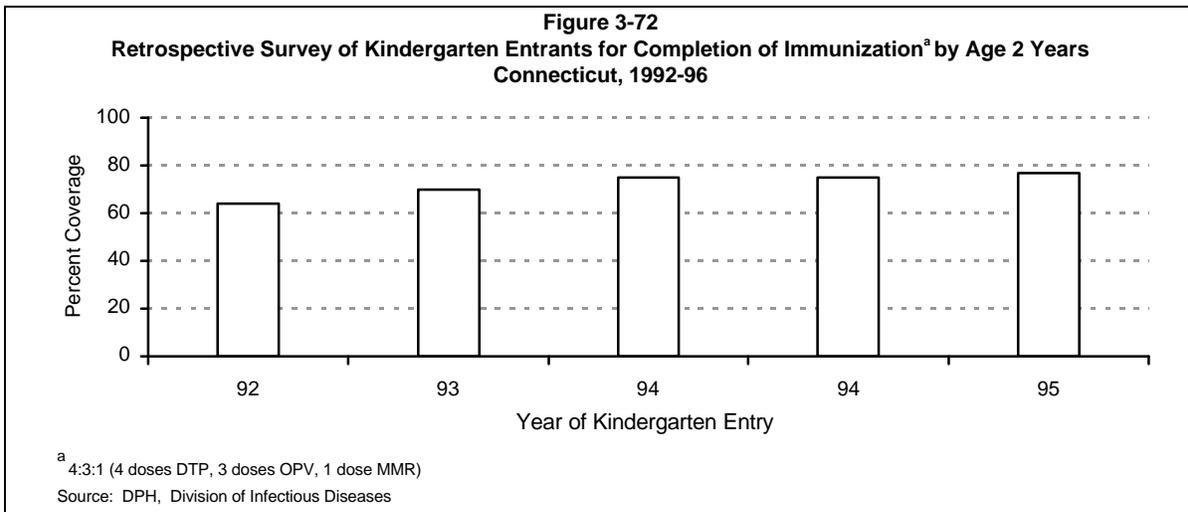
ALL(4DTP) = 4 doses of DTP, 3 doses of OPV, and 1 dose of MMR vaccines.

Source: DPH, BCH, Division of Infectious Diseases

<sup>147</sup> Centers for Disease Control and Prevention. Early childhood vaccination levels among urban children - Connecticut, 1992. *Morbidity and Mortality Weekly Report* 1992; 40:888-891.

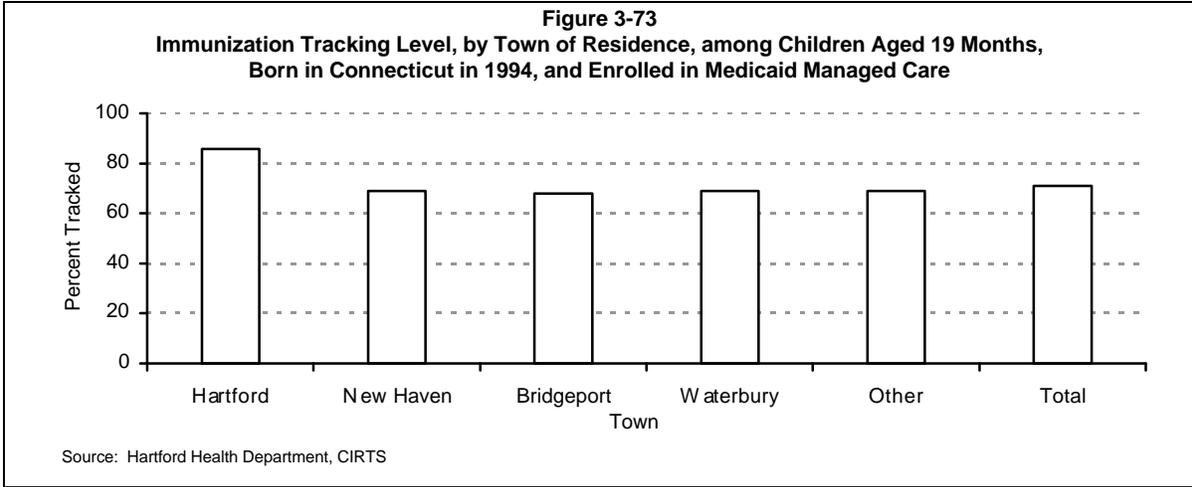
## Measures to Improve Immunization Coverage Rates for 2 Year Olds

In 1993, the Immunization Program with CDC funding initiated the Childhood Infant Immunization program in Connecticut to achieve national immunization objectives. Funds were provided to selected high-risk communities in the state to implement activities designed to improve the quality and quantity of immunization services in their area, enhance provider and parent awareness and build community partnerships, and improve methods of measuring immunization coverage. In addition, an immunization registry and tracking system was initiated in the Hartford area. In 1996, this was expanded to East Hartford and in 1997 to children enrolled in Medicaid managed care. In 1994, CDC initiated the National Immunization Survey (NIS) to determine estimates of state and national vaccination coverage levels among children 19-35 months. The NIS estimated vaccination coverage rates for the primary immunization series reported for children in Connecticut in 1994 and 1995 were 86% and 85%, respectively, which approaches the national year 2000 objective of 90%. In the U.S., rates for the same years were 75 and 76%, respectively. Since 1991, the Immunization Program has conducted an annual survey of kindergarten enterers statewide to determine their immunization levels at age 2 years. The data from these surveys, which reflect immunizations occurring 3 years earlier, show that immunization levels among 2 year olds have been steadily increasing since 1990 (Figure 3-72).



## Tracking of Immunizations

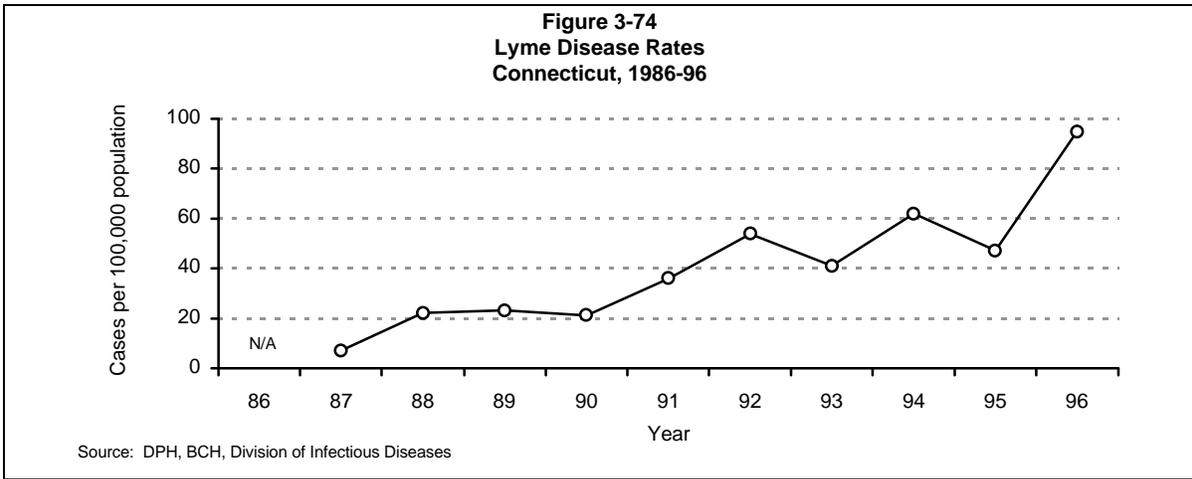
Beginning in late 1996, the Connecticut Immunization Registry and Tracking System (CIRTS) operated by the Hartford Health Department began working with the Department of Social Services and the Medicaid Managed Care (MMC) plans to assess tracking and immunization levels of Connecticut children reaching 2 years of age and enrolled in MMC. A child was “tracked” if the physician in the MMC plan to which he/she was assigned had a record of immunizations by the time the child was 19 months of age. The implication of not being tracked is that the MMC plan does not know whether the child is receiving immunizations and, thus, cannot take action to assure that immunizations and well-child care are being provided. Overall, levels of tracking by aged 19 months among children enrolled in MMC were 71% for those born in 1994 (range, 57-83% by plan) and 72% for those born in 1995 (range 47-88%). The strongest predictor of whether a child was tracked was residence in Hartford, where CIRTS has been active since 1993 (Figure 3-73).



## LYME DISEASE

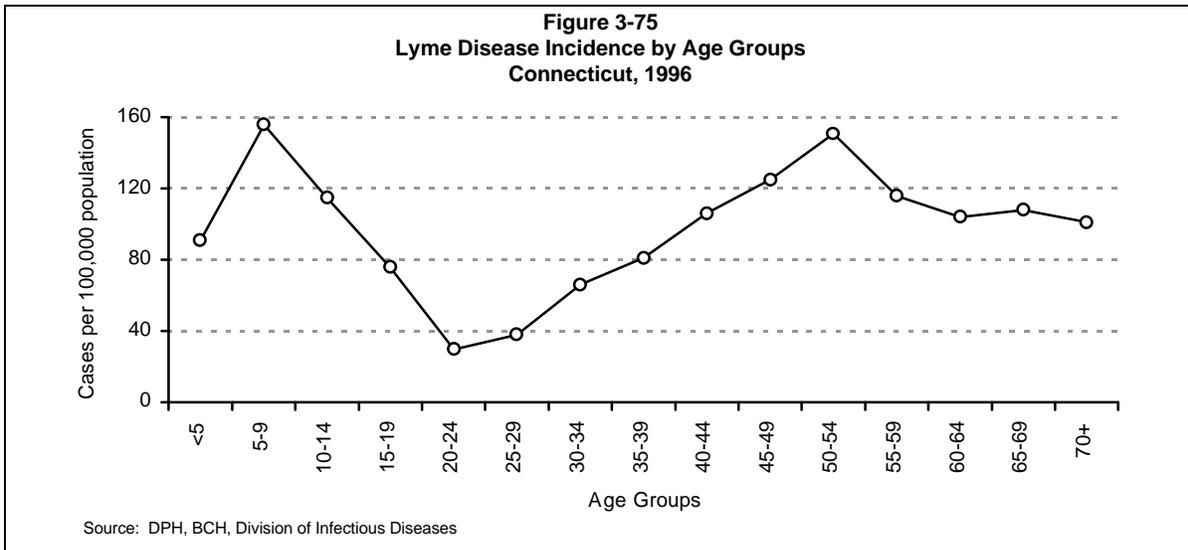
### Summary

Connecticut has had the highest reported rate of Lyme disease in the nation for the previous six years. Since the first full year of surveillance in 1988, Lyme disease incidence increased in all areas of the state (Figure 3-74), particularly in Windham and Litchfield counties. In 1996, the incidence of Lyme disease statewide was 94 cases per 100,000 population.



## High Risk Sub-Groups

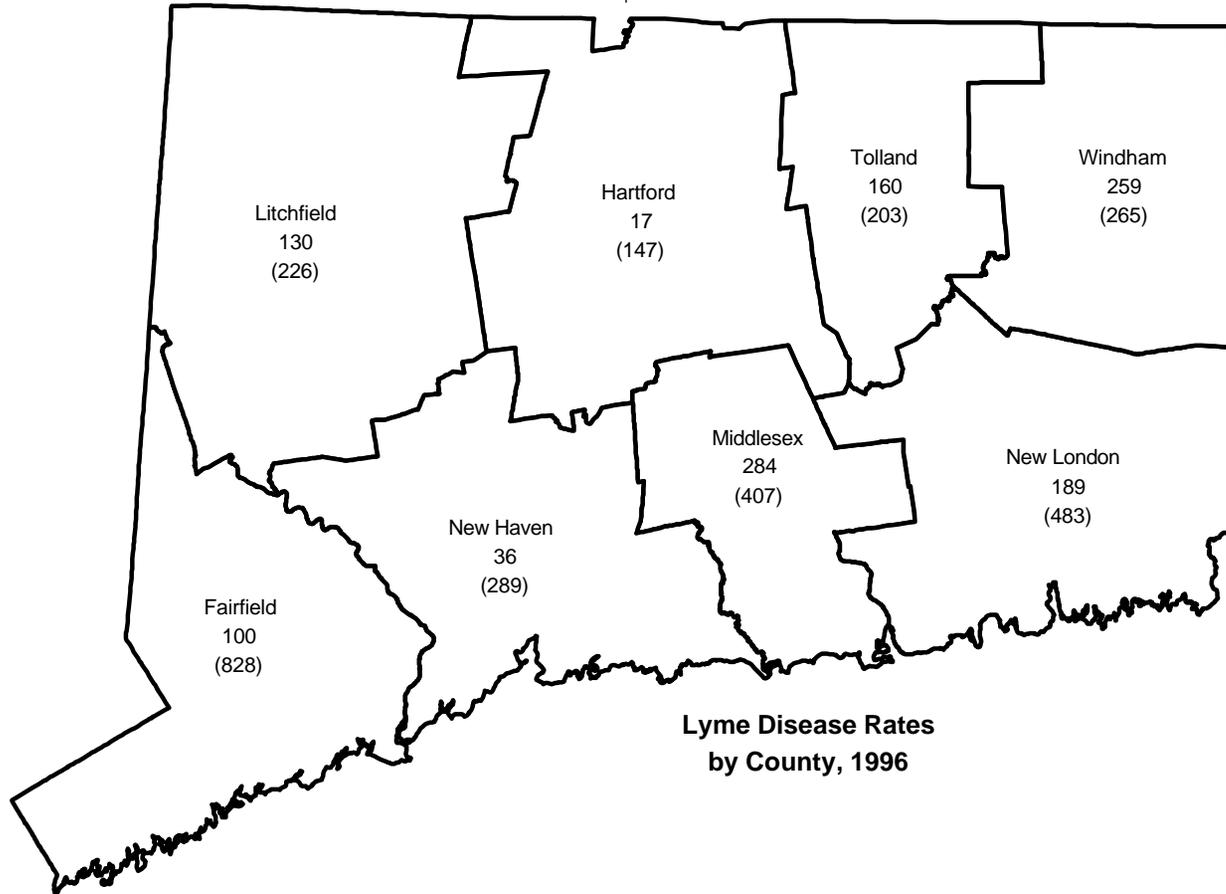
Age and geographic location in Connecticut are strong indicators of who may acquire Lyme disease. In 1996, incidence was highest among children aged 5-9 years (156 cases per 100,000 population) and persons aged 50-54 (151 cases per 100,000). The lowest reported rate was in persons aged 20-24 (30 cases per 100,000) (Figure 3-75). Historically, incidence of Lyme disease in children between the ages of 5 and 14 has been higher than any other age group. Counties reporting the highest incidence of Lyme disease in 1996 were Windham and Middlesex, with rates of 259 and 284 cases per 100,000 population, respectively. In contrast, Hartford County reported the lowest incidence of Lyme disease (17 cases per 100,000 population) (Map 3-13).



## Intervention Strategies

The Connecticut Lyme Disease Program is a collaborative effort among DPH, which is the lead agency, the Connecticut Agricultural Experiment Station, the University of Connecticut Department of Geography, and the University of Connecticut Bureau of Educational Research and Services. The goal of the program is to reduce the incidence of Lyme disease through public and professional education and piloting of methods to reduce tick populations.

Map 3-13



**Lyme Disease Rates  
by County, 1996**

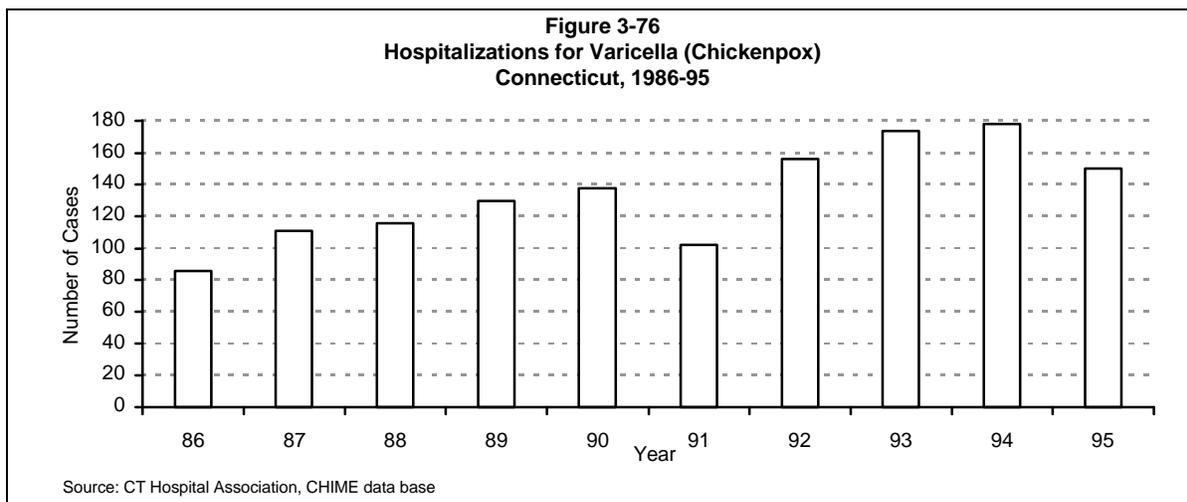
Note: The number of cases in each county is listed in the parenthesis.  
Source: DPH, BCH, Epidemiology Division, 1997

## VARICELLA (CHICKENPOX AND SHINGLES)

### Summary

Infection with varicella-zoster virus causes varicella (chickenpox) and shingles. It has assumed public health importance since varicella vaccine was licensed in early 1995. In the absence of vaccination, almost everyone develops chickenpox at some time during their life. The number of cases approximates the birth cohort over time; thus, there were an estimated 4 million cases of chickenpox annually in the United States in the early 1990s.<sup>148</sup> In addition, there are an estimated 9,000 hospitalizations each year for chickenpox and its complications, and in recent years, there have been 100 deaths annually with chickenpox as an underlying cause.<sup>149</sup> The most common complications of chickenpox, which can result in hospitalization, are bacterial infections of skin lesions, pneumonia, dehydration, encephalitis, and hepatitis. Based on national figures,<sup>150</sup> it is estimated that 1.4% of the entire population of Connecticut gets chickenpox in any given year. Shingles is a form of chickenpox that can only occur in people in whom a latent infection with varicella-zoster virus was established when they had chickenpox. A total of 15-20% of all persons with a history of chickenpox will get shingles in their lifetime.

Chickenpox is still viewed as a benign disease of childhood against which vaccination is not needed; however, this is not the case. In Connecticut each year from 1991 to 1995, an average of 156 residents were hospitalized with chickenpox and 569 with shingles. The average cost per hospitalization in 1995 was \$13,412 for chickenpox (total cost, \$2 million), and \$17,626 for shingles (total cost, \$9.2 million).<sup>151</sup> Hospitalizations for varicella more than doubled from 1986 to 1994 (Figure 3-76). In addition, each year between 1990 and 1994, an average of two people died because of chickenpox, and another 25 from shingles.



### High Risk Subgroups

High risk subgroups for hospitalization due to varicella include children; 49% of all hospitalizations in Connecticut are in children less than 10 years of age (Figure 3-77), persons who are immunosuppressed

<sup>148</sup> Centers for Disease Control and Prevention. Prevention of varicella. Recommendations of the Advisory Committee on Immunization Practices (ACIP). *Morbidity and Mortality Weekly Report* 1996; 45(RR-11):1-25.

<sup>149</sup> Centers for Disease Control and Prevention, 1996.

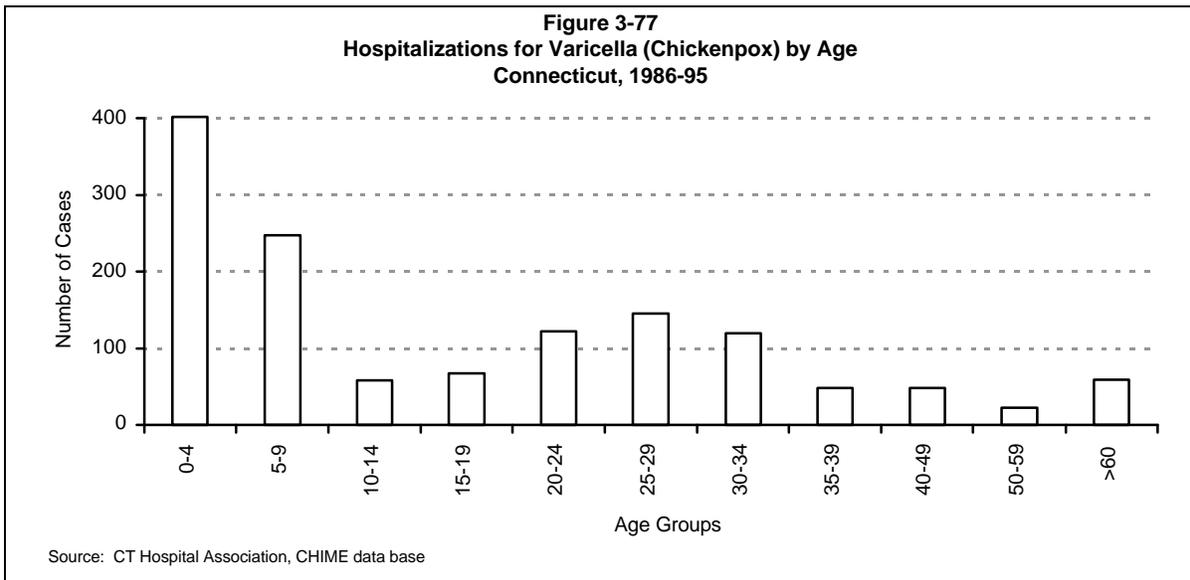
<sup>150</sup> Centers for Disease Control and Prevention, 1996.

<sup>151</sup> Hadler, J. Connecticut Department of Public Health, Division of Infectious Diseases. Personal communication based on analysis of data provided by the Connecticut Hospital Association, 1997.

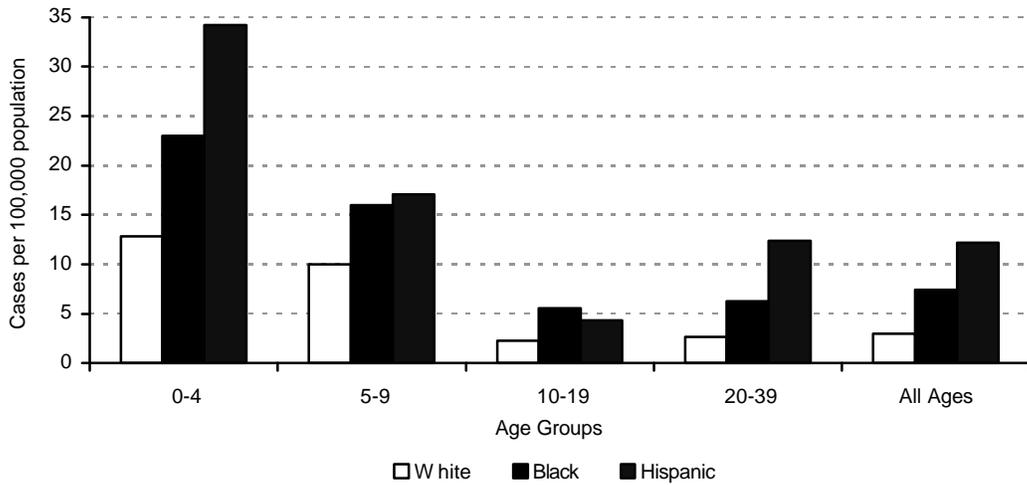
(17% of all hospitalizations) and minorities. Overall, blacks were 2.5 times more likely to be hospitalized with varicella than whites, and Hispanics were 4.1 times more likely (Figure 3-78).

### Measures to Reduce Varicella Illness

Because the varicella virus vaccine was only recently been licensed in United States (March, 1995), many susceptible children and adolescents have not yet been vaccinated and varicella continues to occur, with annual outbreaks in the spring. Since January 1, 1997, the state Immunization Program has been making varicella vaccine purchased with federal funds available to vaccinate all infants without health insurance or enrolled in Medicaid. Surveillance of hospitalizations and eventually of incident cases will be important in the future to assess the impact of vaccination, to evaluate the effectiveness of vaccination programs and prevention strategies, and, in the long run, to determine long- term changes in the epidemiology of chickenpox and shingles.



**Figure 3-78**  
**Hospitalizations for Varicella (Chickenpox)**  
**Average Annual Rates by Race/Ethnicity for Selected Age Groups**  
**Connecticut, 1986-95**



Source: CT Hospital Association, CHIME data base

## INVASIVE PNEUMOCOCCAL DISEASE

### Summary

The bacterium *Streptococcus pneumoniae* can cause a wide range of infections, including pneumonia, otitis media, meningitis, and bloodstream infections. Invasive infections due to *S. pneumoniae* are among the most common serious bacterial infections in man. They are of public health concern because many are preventable with vaccine, they can occur in clusters in crowded settings, and because antibiotic-resistant strains of *S. pneumoniae* have recently emerged.

As part of the Connecticut Emerging Infections Program, DPH is conducting active, population-based laboratory surveillance for invasive pneumococcal infections, i.e., those infections in which *S. pneumoniae* is isolated from a body site that is normally sterile (blood, spinal or joint fluid). The purpose of the surveillance system is to assess geographic and temporal trends in drug-resistant *S. pneumoniae* (DRSP). During the first 12 months of active surveillance (March 1, 1995 through February 29, 1996), 801 cases (25 per 100,000 population) of invasive pneumococcal disease were identified. A total of 733 isolates from 705 cases were tested for antimicrobial susceptibility to a panel of drugs, including penicillin; 119 (16%) were penicillin non-susceptible and 67 (9%) had high-level resistance. This is a 12-fold increase in penicillin non-susceptible *S. pneumoniae* and a 36-fold increase in high-level resistance from 1993.

## High Risk Subgroups

The rate of invasive pneumococcal disease was highest among those aged 0-4 years, those 65 years and older, and among blacks (Table 3-29). Although the rate was lowest among whites, levels of penicillin-non-susceptible and penicillin-highly-resistant *S. pneumoniae* were much higher in whites than in other groups. No cases of penicillin non-susceptible or penicillin highly resistant *S. pneumoniae* were reported among Hispanics.

**Table 3-29**  
**Incidence of Disease and Percentage of *Streptococcus pneumoniae* Isolates Resistant to Penicillin by Age and by Race/Ethnicity Connecticut, 3/1/95 - 2/29/96**

Group	Disease Incidence		<i>S. pneumoniae</i> Penicillin Resistance	
	No. Cases (N=705)	Rate per 100,000 <sup>a</sup>	Non-susceptible Isolates (%)	Highly Resistant Isolates (%)
<i>Age (years):</i>				
0-4	126	55 <sup>b</sup>	16%	12%
5-64	308	12	16%	8%
65+	271	61 <sup>b</sup>	16%	8%
<i>Race/Ethnicity:</i>				
White	454	17 <sup>b</sup>	19%	12% <sup>b</sup>
Black	154	59 <sup>b</sup>	15%	6%
Hispanic	51	24	0%	0%
Other/Unknown	46	81	13%	7%

<sup>a</sup> Group-specific rate per 100,000 population based on 1990 U.S. Census counts.

<sup>b</sup> Statistically significant (p < 0.05).

Source: DPH, BCH, Division of Infectious Diseases

## Geographic Variation

Penicillin non-susceptible *S. pneumoniae* cases were reported from all counties in Connecticut, ranging from 13% in Hartford County to 29% in Middlesex County. The percentage of penicillin highly resistant *S. pneumoniae* ranged from 6% in New Haven County to 21% in Middlesex County.

## Antimicrobial Susceptibility Testing

As shown in Table 3-30, a low percentage of penicillin-susceptible *S. pneumoniae* isolates were resistant to other antimicrobials. At least 50% of penicillin-non-susceptible and highly resistant *S. pneumoniae* isolates were resistant, however, to one or more other antimicrobials, including amoxicillin, cefotaxime, and TMP-S. Co-resistance at lower levels was found for chloramphenicol, clindamycin, erythromycin, and tetracycline.

## Control of Drug Resistant *Streptococcus pneumoniae*

In Connecticut, drug-resistant *S. pneumoniae* has increased over time, and its emergence challenges both the medical and public health communities. Controlling the increase of drug-resistant bacteria will require more judicious use of antimicrobial agents and wider use of the existing vaccine. Although appropriate antimicrobial-drug use has unquestioned benefit, often these agents are used inappropriately by physicians and patients, creating additional selective pressure for antibiotic resistance. The vaccine for the 23 most common serotypes of *S. pneumoniae* has been available since the early 1980s, but remains underutilized.

**Table 3-30**  
**Percentage of Penicillin Susceptible, Non-susceptible, and**  
**Highly Resistant Pneumococcal Isolates Resistant to Selected Antimicrobials**  
**Connecticut, 3/1/95 - 2/29/96**

Antimicrobial	<i>S. pneumoniae</i> Isolates: Susceptibility/Resistance to Penicillin		
	Susceptible (%)	Non-susceptible (%)	Highly Resistant (%)
Amoxicillin	0	5 <sup>a</sup>	92 <sup>a</sup>
Cefotaxime	<1	55 <sup>a</sup>	94 <sup>a</sup>
Chloramphenicol	<1	13 <sup>a</sup>	20 <sup>a</sup>
Clindamycin	<1	6 <sup>a</sup>	8 <sup>a</sup>
Erythromycin	2	18 <sup>a</sup>	19 <sup>a</sup>
Ofloxacin	<1	2	3
Rifampin	<1	<1	2
Tetracycline	2	17 <sup>a</sup>	22 <sup>a</sup>
TMP-S	8	70 <sup>a</sup>	97 <sup>a</sup>
Vancomycin	0	0	0

<sup>a</sup> Statistically significant (p<0.05).

Source: DPH, BCH, Division of Infectious Diseases

## PNEUMOCOCCAL AND INFLUENZA IMMUNIZATIONS IN THE ELDERLY

### Summary

One of the national health objectives for the year 2000 is to increase influenza and pneumococcal vaccination levels to at least 60% for persons at high risk for influenza and pneumococcal disease, including those aged 65 years or older. In Connecticut, estimates of influenza and pneumococcal vaccination coverage levels are based on data from the BRFSS. In 1995, 62% of respondents aged 65 and older reported getting a flu shot in the past year. This was an improvement over the 56% rate reported in 1994 and exceeded the national objective of 60% (Figure 3-79). In 1995, 37% of respondents aged 65 and older reported they had received a pneumonia vaccination. This was a marked improvement over the 19% rate reported in 1993, though still far below the objective of 60%. Achieving this objective will require continuing collaboration among public and private organizations to improve awareness and vaccine delivery, changes in clinical practice, vaccine delivery mechanisms that limit cost and remove accessibility constraints, and surveillance data, such as those provided by the BRFSS, to assess the progress of current and future programs.

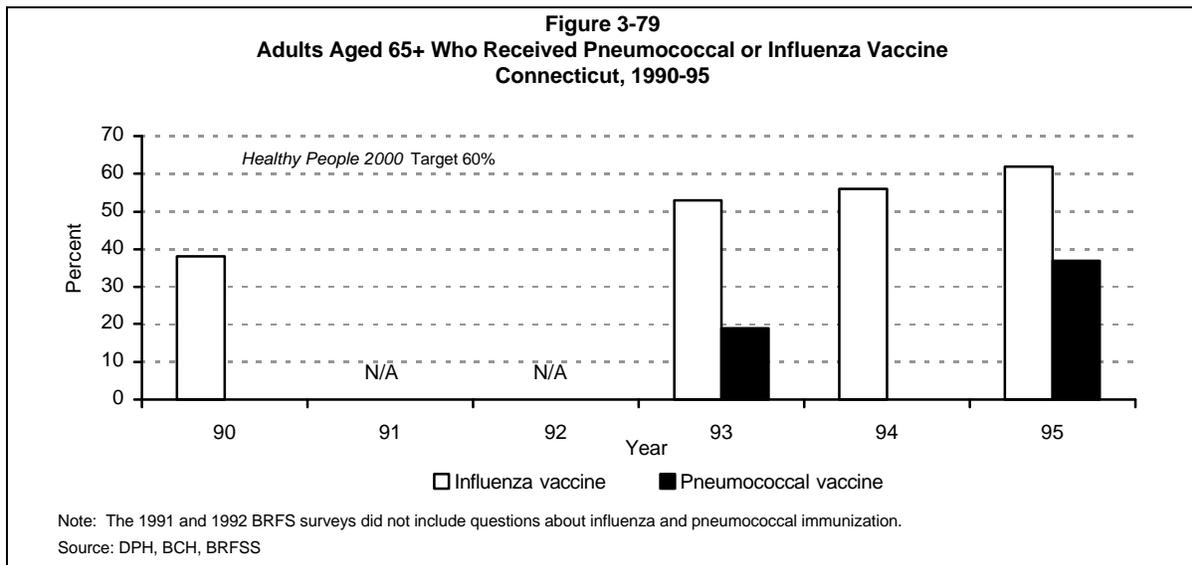
### Reasons for Optimism

The influenza vaccination rate reported in the 1995 BRFSS for Connecticut was the highest reported for older persons to date. Reasons suggested for the rise in influenza vaccination levels include 1) greater acceptance of preventive medical services by practitioners, 2) increased delivery and administration of

vaccine by health-care providers and sources other than physicians (e.g., visiting nurse and home health agencies), and 3) the initiation of Medicare reimbursement for influenza vaccination in 1993.

### Need for Improvement

Both in Connecticut and nationally, pneumococcal vaccination levels have increased over time, but remain substantially lower than coverage achieved for influenza vaccine. Nationally, distribution of pneumococcal vaccine increased from 1.2 million doses in 1989 to 3.6 million doses in 1993, consistent with increasing self-reported vaccination levels. The lower rate of coverage may reflect that many providers and patients may not be routinely reminded about the need for pneumococcal vaccination among persons aged 65 years and over, whereas campaigns for influenza vaccination occur annually before the influenza season. Thus, there is a need to educate providers and the public about the current recommendations benefits of pneumococcal vaccination .



## FOODBORNE DISEASES

### Summary

Safety of the food supply is a major public health concern. Ingestion of food products contaminated with pathogenic infectious agents can lead to a wide range of health consequences with substantial mortality. Some of the more severe health consequences are paralysis (botulism), acute and chronic intestinal illness complicated by dehydration, weight loss, and malnutrition (wide variety of pathogens), bloodstream infection (typhoid fever, many other bacterial pathogens), and hemolytic-uremic syndrome (Shiga-toxin-producing bacteria, including *Escherichia coli* O157:H7). Four relatively common foodborne bacterial pathogens that can cause many of these health consequences are most commonly used for monitoring food safety: *Salmonella*, *Campylobacter*, *Escherichia coli* O157:H7 (referred to henceforth as O157), and *Shigella*.

A national health objective for the year 2000 is to reduce the incidence of infections with O157 to 4 per 100,000 population, *Campylobacter* infections to 25 per 100,000 population, *Salmonella* infections to 16 per 100,000 population, and to reduce outbreaks of infections due to *Salmonella enteritidis* to fewer than 25 outbreaks yearly. There is no year 2000 objective for *Shigella* infections. The recent status of progress toward these objectives is shown in Table 3-31. In addition to achieving the infection rates shown in the table, Connecticut had 2 outbreaks of infections due to *S. enteritidis* in SFY 1996, which was twice the *Healthy Connecticut 2000*<sup>152</sup> objective of 1 outbreak per year.

**Table 3-31**  
**Infection Rates for Key Foodborne Pathogens**  
**Connecticut, SFY 1996**

Disease Organism	Infection Rate per 100,000 Population	
	Year 2000 Target	Connecticut SFY 1996
<i>Salmonella species</i>	16	18.8
<i>Campylobacter jejuni</i>	25	NA <sup>a</sup>
<i>Escherichia coli</i> O157:H7	4	2.0

<sup>a</sup>The Epidemiology Program discontinued lab reporting and tabulation of this pathogen in 1993, however, it was recently reinstated and will appear as a tally on future reports.  
Source: DPH, BCH, Division of Infectious Diseases

From 1992-1996, O157, *Salmonella*, and *Shigella* infections were all physician-reportable diseases and laboratory-reportable findings. *Campylobacter* was made reportable in 1997. From 1992-1996, 243 cases of O157 (average annual rate of 1.5 cases per 100,000 population), 3,585 cases of salmonellosis (average annual rate of 24 cases per 100,000 population), and 917 cases of shigellosis (average annual rate of 5.6 cases per 100,000 population) were reported in Connecticut. Since 1992, DPH investigated 10 outbreaks of salmonellosis, seven of which were due to *S. enteritidis*. The introduction and dissemination of strains of *S. enteritidis* that can infect chickens and intact shell eggs is responsible for an increase in outbreaks of salmonellosis. Since 1992, DPH has investigated four outbreaks of O157. Vehicles for the bacterial pathogen in these outbreaks were varied and included undercooked ground beef, foods purchased at a single delicatessen, lettuce, and unpasteurized apple cider.

### Time Trends

The average annual incidence between 1992 and 1996 of infections caused by *Salmonella*, *Shigella*, and *E. coli* O157:H7 is shown in Figure 3-80.

<sup>152</sup> Connecticut Department of Public Health and Addiction Services, Office of Health Policy Development. *Healthy Connecticut 2000 Baseline Assessment Report*. Hartford, CT: The Department. 1994.

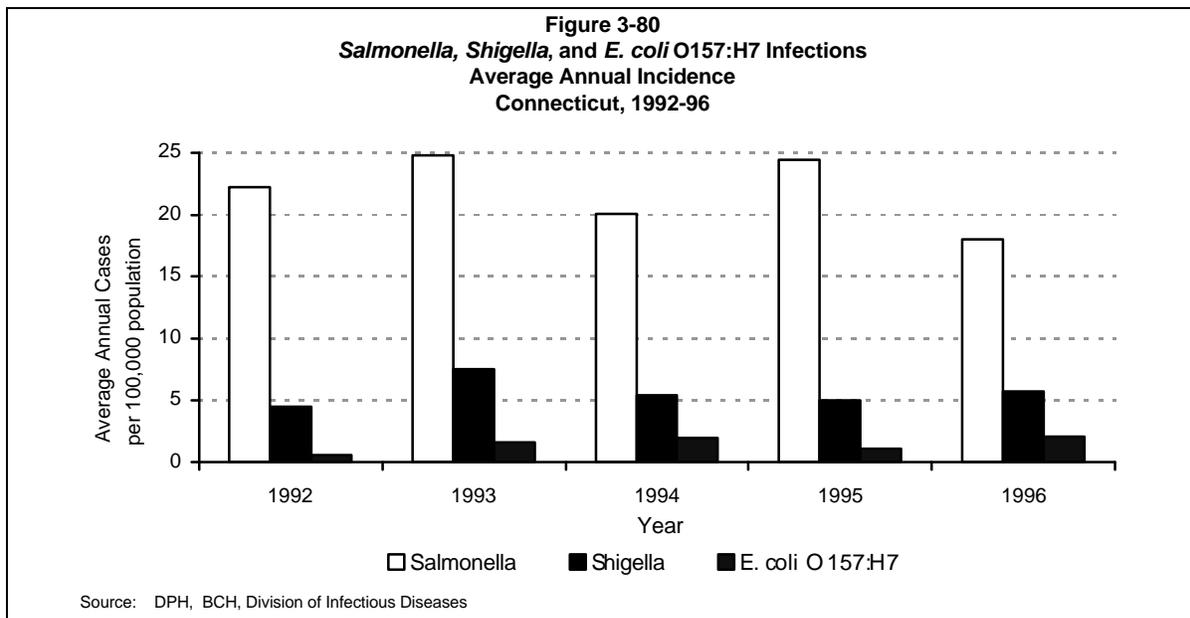
## High Risk Subgroups

For salmonellosis, rates of illness were highest in children under age 10 years and adults aged 20-29 years and >80 years (Figure 3-81). Rates of illness in cases of shigellosis were highest among those aged <10 years and 20-29 years. The highest rates of *E. coli* O157:H7 infections were observed in children under the age of 10.

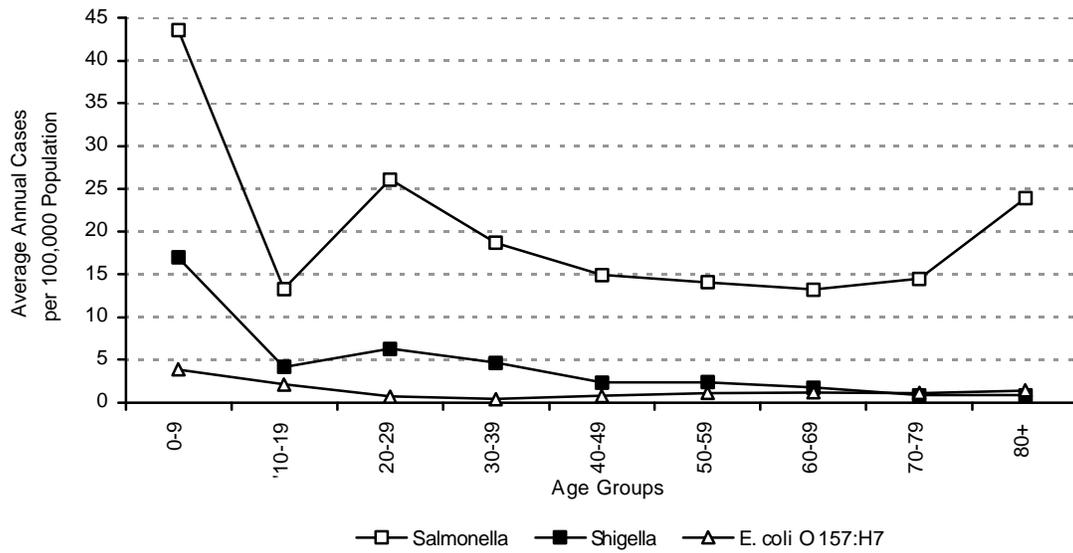
## Risk Factors and Measures to Reduce Foodborne Illness

The key risk factors for local outbreaks are improper holding temperatures, inadequate cooking, contaminated equipment, food from unsafe sources, and poor personal hygiene. Increasingly, widespread but low-level outbreaks from contaminated food products once thought to be safe (e.g., apple cider, lettuce, raspberries, other produce) are being identified.

Measures to reduce foodborne illness occur at the local, state, and national levels. At the local level, routine inspection of food establishments aims to improve their sanitary conditions. At the state and national levels, requirements to pasteurize or otherwise decontaminate certain foods, guidelines for safe food storage and preparation, and investigation and control of outbreaks assure reasonable protection from contaminated foods. State and local health codes nationwide and in Connecticut generally follow model food establishment codes developed by the national Food & Drug Administration. At the national level, oversight of food production and importation attempts to limit the extent to which food products are contaminated before they are brought to market.



**Figure 3-81**  
**Salmonella, Shigella, and E. coli O157:H7 Infections**  
**Average Annual Incidence by 10 year Age Groups**  
**Connecticut, 1992-96**



Source: DPH, BCH, Division of Infectious Diseases

# ENVIRONMENTAL AND OCCUPATIONAL HEALTH

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## HIGHLIGHTS

- In 1996 all eight Connecticut counties were in violation for one or more of the six “criteria” air pollutants regulated by the U.S. EPA, and all exceeded the federal standard for ozone. Fairfield County was out of attainment for carbon monoxide. All Connecticut residents are thus at some risk for respiratory disease from exposure to such pollutants.
- Connecticut has more than 500 hazardous waste sites. Approximately 74,000 people live in the vicinity of the 15 federal Superfund sites and may be exposed to contamination related to the sites.
- More than 600 community public water supplies serve about 83% of Connecticut’s population; at any given time more than 99% are in compliance with water supply regulations. There is zero incidence of waterborne disease in Connecticut.
- Based on preliminary data, the prevalence of elevated blood lead levels of  $\geq 10$   $\mu\text{g}/\text{dL}$  in Connecticut children under age 6 was 6.2% in 1995. In the towns of Bridgeport, New Haven, and Hartford, the prevalence was 22.1%, 18.0%, and 12.9%, respectively.
- The 1992 Connecticut infant mortality rate for birth defects was 1.7 per 1,000 live births.
- Connecticut industries with rates of non-fatal occupational illness and injury that are higher than the *Healthy People 2000* objectives are: state and local government; agriculture, forestry, and fishing; manufacturing; construction; retail; transportation/public utilities; wholesale; services and mining.
- The four leading occupational illnesses in 1992-96, as reported to the Connecticut occupational surveillance system, were: repetitive trauma disorders, poisonings by toxic materials, skin disease/disorders, and respiratory diseases/disorders.

## AIR POLLUTION

### Summary

The Healthy Connecticut 2000<sup>153</sup> and Healthy People 2000<sup>154</sup> objectives include county attainment standards for ambient air pollution. In 1996, all 8 Connecticut counties were out of attainment for at least one of the six criteria air pollutants regulated by the U.S. EPA. The contaminant of most concern in Connecticut is ozone and none of the 8 counties meet the ozone standard. Other contaminants such as particulate matter and carbon monoxide were problems in more limited areas of the state (Map 3-14).

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<sup>153</sup> Connecticut Department of Public Health and Addiction Services, Office of Health Policy Development. *Healthy Connecticut 2000 Baseline Assessment Report*. Hartford, CT: The Department. 1994: Objective 11.5.

<sup>154</sup> U.S. Department of Health and Human Services, Public Health Service. *Healthy People 2000: National Health Promotion and Disease Prevention Objectives. Full Report with Commentary*. Washington, D.C., Public Health Service. 1990:320.

Connecticut and the rest of the Northeast have a more severe ozone problem than most regions in the United States. Surface-level ozone is primarily a product of chemical reactions starting with various emissions from automobiles. Ozone is a well studied respiratory irritant that among other effects can cause or exacerbate asthma. Particulate matter (PM<sub>10</sub>) has been associated with increased mortality in numerous epidemiological studies. Carbon monoxide is a special risk to those with pre-existing conditions such as heart disease or pregnancy.

### High Risk Subgroups

The population groups that are at risk from the six criteria pollutants are shown in Table 3-32. Different groups are associated with different pollutants.

**Table 3-32  
Populations at Risk for Air Pollutants**

Pollutant	Population at Risk
<i>Particulate matter</i>	Pre-adolescent children (≤13 years old) Elderly persons (65+ years old) Persons with pre-existing respiratory disease <sup>a</sup>
<i>Sulfur dioxide</i>	Pre-adolescent children (≤13 years old) Persons with pre-existing respiratory disease <sup>a</sup>
<i>Carbon monoxide</i>	Pregnant women Persons with pre-existing coronary heart disease
<i>Ozone</i>	Persons with pre-existing respiratory disease <sup>a</sup> Elderly persons (65+ years old)
<i>Nitrogen dioxide</i>	Pre-adolescent children (≤13 years old) Pre-adolescent children (≤13 years old) Persons with pre-existing respiratory disease <sup>a</sup>
<i>Lead</i>	Children ≤5 years old Pregnant women

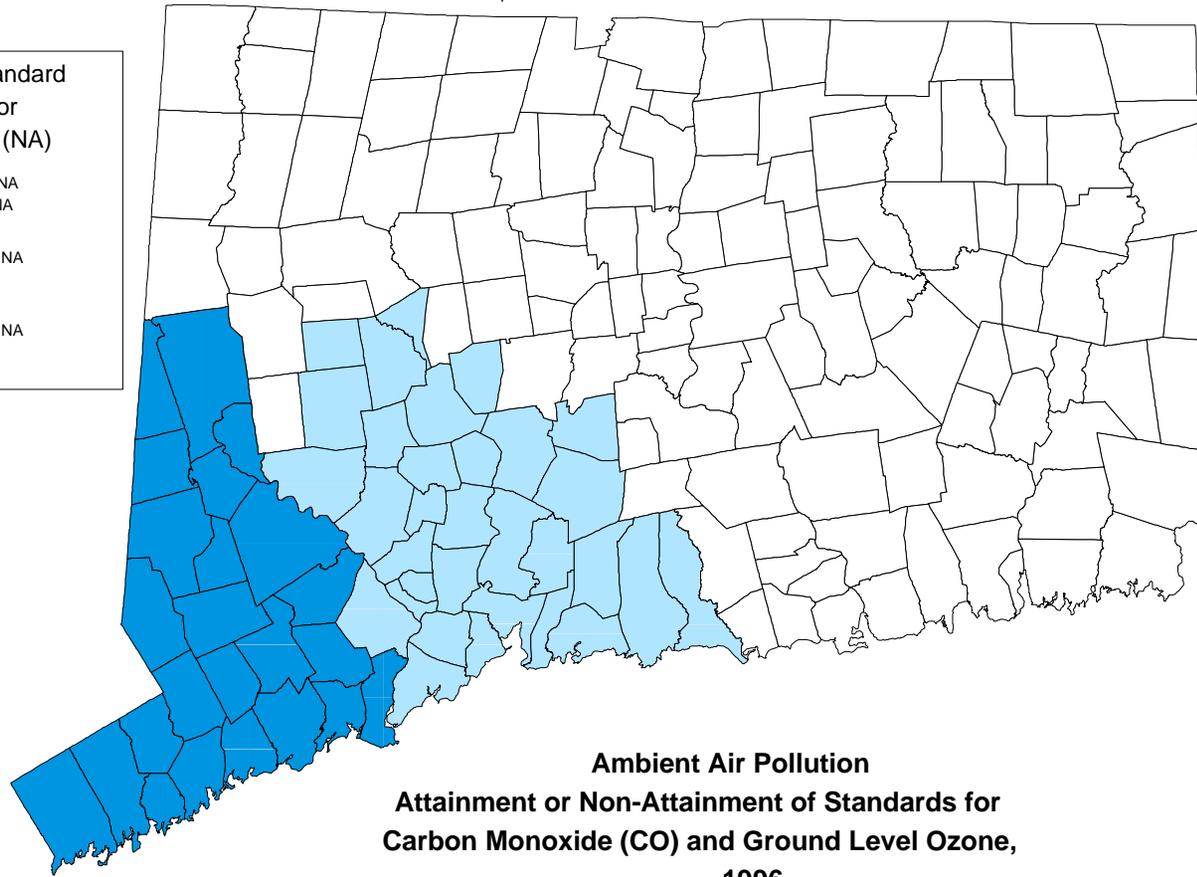
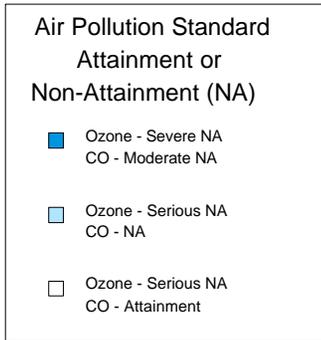
<sup>a</sup> "Respiratory disease" comprises asthma and chronic obstructive pulmonary disease (COPD), including emphysema and chronic bronchitis.

Source: DPH, Environmental Epidemiology and Occupational Health Division

### Geographic Variation

All Connecticut counties are in violation of at least one ambient air standard. Ozone accounts for most areas being out of attainment. The areas of Connecticut that are in "Severe Non-attainment" and "Serious Non-attainment" for ozone are shown in Map 3 - 14. Only Fairfield County is in consistent non-attainment for carbon monoxide. For particulate matter (PM<sub>10</sub>) only the City of New Haven is in non-attainment. As all Connecticut counties violate the ozone standard, all Connecticut residents are at some risk from ozone exposure. Estimates of high risk populations in counties in non-attainment for ozone are given in Table 3-33.

Map 3-14



Source: DPH, BCH, 1997

**Table 3-33**  
**Estimated Populations at Risk for Asthma and Chronic Obstructive**  
**Pulmonary Disease (COPD) in Ozone Non-attainment Areas**  
**Connecticut, 1996**

County	Age specific Populations		Persons at Risk for:		
	≤13 years	65+ years	Asthma		COPD
			Pediatric	Adult	All
Fairfield	147,079	110,068	10,778	23,279	47,587
Hartford	152,118	119,626	11,079	23,919	48,986
Litchfield	32,301	24,593	2,345	4,841	10,048
Middlesex	24,697	18,771	1,809	4,051	8,122
New Haven	145,631	117,977	10,519	22,523	46,382
New London	48,443	30,422	3,456	7,055	14,209
Tolland	23,051	11,555	1,671	3,601	6,881
Windham	21,097	12,895	1,519	2,758	5,774
Connecticut	594,417	445,907	43,176	92,027	187,989

Source: American Lung Association

## HAZARDOUS WASTE SITES

### Summary

As part of a cooperative agreement with the Agency for Toxic Substances and Disease Registry, part of the U.S. Public Health Service, the DPH Division of Environmental Epidemiology and Occupational Health identify populations at risk to help prevent exposures and their adverse health effects. More than 110,000 Connecticut residents live within one mile of the state's 15 federal Superfund sites (i.e., those that are on the National Hazardous Waste Priority List) (Map 3-15). Approximately 74,000 people have been exposed to site-related contaminants, most through drinking water. Volatile organic compounds, some of which are carcinogenic, are most often associated with these exposures. Additional potential exposures have been identified for soil, ambient air and surface waters. The Superfund sites represent only a small fraction of the more than 500 state-listed sites, many of which have not yet been fully characterized.

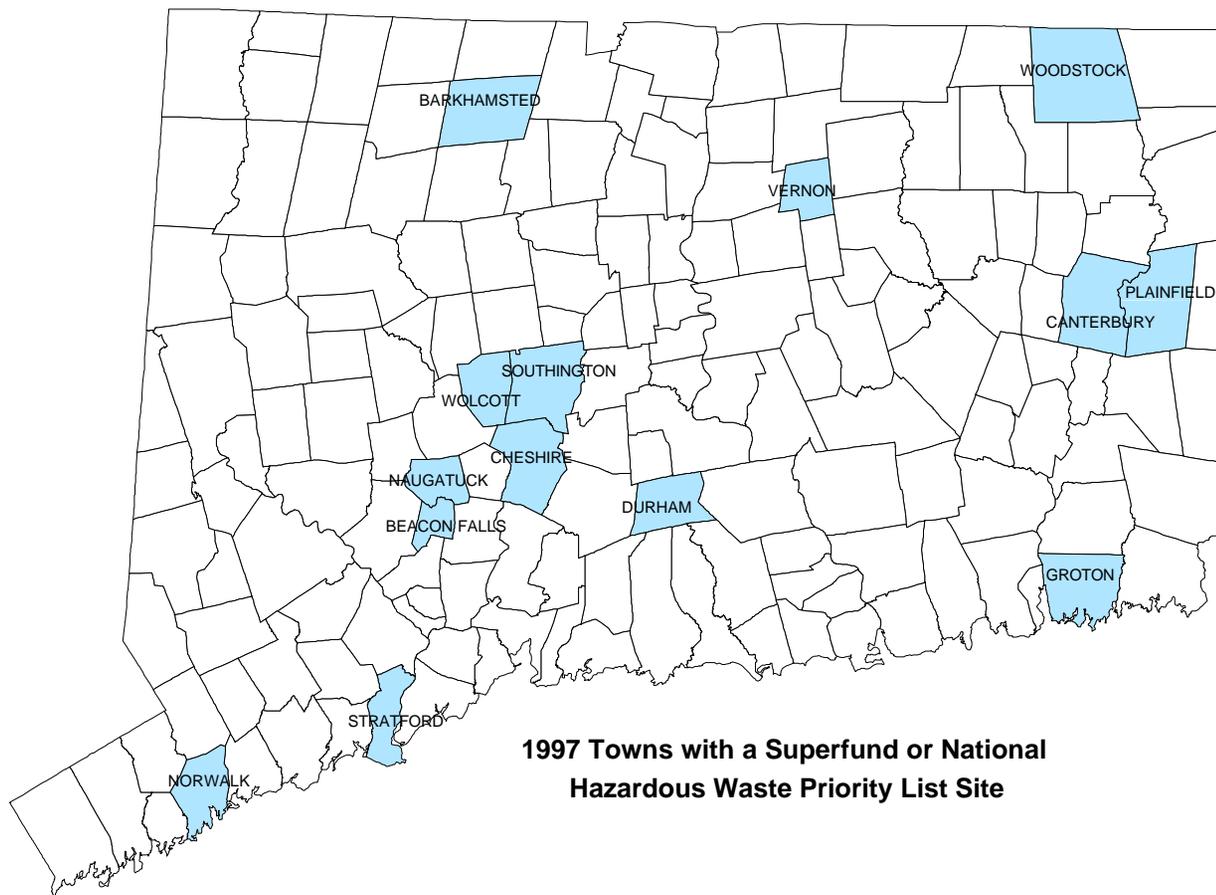
Data from Superfund sites around the country suggest that proximity to hazardous waste is associated with a small to moderate increased risk of some specific cancers, and increases in the risk of birth defects, neurotoxic disorders, leukemia, respiratory and sensory irritation, and dermatitis.<sup>155</sup>

### Modifiable Risk Factors for Intervention

Hazardous waste sites are evaluated and cleaned up on a case-by-case basis. Regulatory agencies such as the Connecticut Department of Environmental Protection (DEP) and the U.S. EPA have authority to order or conduct cleanup, but they often rely on DPH for prioritization of health risk. Health studies and risk assessments conducted by DPH are utilized by DEP and EPA to make health protective risk management decisions.

<sup>155</sup> Testimony of Barry L. Johnson, Ph.D., Assistant Surgeon General, Assistant Administrator, Agency for Toxic Substances and Disease Registry, Public Health Service, U.S. Department of Health and Human Services before the Subcommittee on Commerce, Trade and Hazardous Materials Committee on Commerce, U.S. House of Representatives. May 23, 1995.

Map 3-15



**1997 Towns with a Superfund or National  
Hazardous Waste Priority List Site**

Source: U.S. Public Health Service, Agency for Toxic Substance & Disease Registry,  
Division of Environmental Epidemiology & Occupational Health

## DRINKING WATER

### Summary

The DPH is the primacy agency for the federal Safe Drinking Water Act (SDWA) in Connecticut. The principal goal in this capacity is to ensure a safe and adequate supply of drinking water by reducing or eliminating the threat of bacteriological and chemical contamination and by developing and coordinating water supply planning activities. It is estimated that all of Connecticut's 3.2 million residents and a significant transient population are benefited by the program.

DPH, through its Water Supplies Section, regulates both community and non-community public water systems in Connecticut. Public systems are those that serve 25 or more people or have 15 or more service connections. Community systems (the category of systems to which year 2000 objectives pertain) serve a year-round *residential* population. About 83% of the state's population receive water from community systems. Recent and anticipated changes in federal and state legislation have broadened DPH's scope of responsibility for drinking water supplies. Re-authorization of SDWA in 1996, for example, enabled DPH to establish a Drinking Water State Revolving Fund, which will increase public health protection by providing significant funding to public water systems for infrastructure improvements. Private water systems, including residential wells, came under the agency's jurisdiction for the first time in 1997, and up to 500,000 entities ultimately could be affected.

### Water Quality

Two national year 2000 objectives pertain to drinking water. The first (Objective 11.3) is to reduce outbreaks of waterborne disease from infectious agents and chemical poisoning to no more than 11 per year; and the second (Objective 11.9) is to increase to at least 85% the proportion of people who receive drinking water that meets federal safe drinking water standards.<sup>156</sup>

#### *Waterborne Disease Outbreaks*

There has been zero incidence of waterborne disease in Connecticut in the 1990's. The high quality of drinking water in Connecticut has been maintained through a variety of regulatory activities and coordinated planning activities. All surface water supplies, for example, are filtered or are under order to do so, significantly reducing risk from waterborne disease.

#### *Compliance with Federal Standards*

The national year 2000 objective for safe drinking water has been exceeded. In 1996, greater than 90% of Connecticut's population on community water supplies received drinking water in full compliance with the federal standards.

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<sup>156</sup> U.S. Department of Health and Human Services, Public Health Service. *Healthy People 2000. National Health Promotion and Disease Prevention Objectives*. Washington, DC, Public Health Service. 1990:106.

# BLOOD LEAD LEVELS IN CHILDREN

## Summary

Childhood lead poisoning is one of the most common and preventable pediatric public health problems in the United States. With the elimination of lead in gasoline, the remaining major source of lead exposure in children is ingestion of lead paint chips or dust from deteriorated lead-based paint in older homes. The sale of lead-based paint for residential use was banned in 1978. Additionally lead-based paint that was available prior to 1950 contained higher concentrations of lead. Many homes built prior to 1950 contain lead-based paint throughout the interior and exterior of the home. In 1990, the U.S. Census documented 1,320,850 dwelling units in Connecticut, of which 462,808 (35%) were constructed prior to 1950.<sup>157</sup>

Screening of young children is one component of the overall strategy to eliminate childhood lead poisoning. According to the 1990 U.S. Census, there were 272,294 children under age six living in Connecticut. In 1995, 74,027 children under age six (27.2%) were screened for lead poisoning. Screening for lead poisoning is especially important for children between the ages of one and two, as they are at higher risk due to the frequency of hand-to-mouth activity and the vulnerability of their rapidly developing nervous systems to the effects of lead exposures. Of children in this age group, 35% were screened in 1995.

Based on preliminary data, prevalence of elevated blood lead levels of 10 µg/dL or greater among the children age less than six years was 6.2% during 1995. This figure is higher than the national estimate of 4.4%<sup>158</sup> for this age group. The prevalence of children with elevated blood lead levels of 10 µg/dL or greater among Connecticut's urban areas was even higher than the Connecticut statewide or national figures. Urban areas also contain a larger share of the State's older housing and are more likely to contain lead-based paint in deteriorated condition.

## Geographic Variation within Connecticut

The percentage of dwellings constructed prior to 1950 and the prevalence of elevated blood lead levels varies considerably by municipality. Based on preliminary data, the three towns with the highest prevalence of elevated blood lead levels for children less than 6 years of age are Bridgeport (22.1%), New Haven (18.0%), and Hartford (12.9%), each far exceeding the national estimate of prevalence among children of this age. These municipalities also have some of the highest percentages of housing built prior to 1950 -- Bridgeport (53.5%), New Haven (57.1%), and Hartford (51.1%). In fact, most Connecticut municipalities have a higher percentage of pre-1950 housing than the 27% of national average used by the CDC in their current screening guidelines.<sup>159</sup>

## Current Intervention Activities

Lead poisoning transcends all geographic, racial and socioeconomic boundaries. The DPH Childhood Lead Poisoning Prevention Program (CLPPP) provides a comprehensive base of services that include activities at the state and community levels. This involves:

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<sup>157</sup> State of Connecticut, Office of Policy and Management, The Connecticut Data Center. *Connecticut Population and Household Characteristics, 1990 Census Complete Count Data - Part A*. Hartford, CT: OPM. August 1991.

<sup>158</sup> U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention. Report on Phase 2 of the Third National Health and Nutrition Examination Survey (NHANES 3), Update: Blood Lead Levels - United States, 1991-1994. *Morbidity and Mortality Weekly Report*. 1997;46(7):141-146.

<sup>159</sup> U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention. Screening young children for lead poisoning: guidance for state and local public health officials. Atlanta, GA: DHHS. November 1997.

- Surveillance of children tested for lead poisoning, including the collection of demographic, medical, and environmental/dwelling information on children affected by lead poisoning. This information is used to identify and monitor communities that will most benefit from targeted prevention and intervention strategies.
- Developing, implementing, and enforcing regulations to ensure effective and safe identification and remediation of lead-based paint hazards.
- Developing primary prevention strategies, which may include establishing “standard of care” regulations to address “lead-safe” rental housing and developing appropriate renovation and remodeling protocols.
- Evaluating the quality and appropriateness of existing risk reduction materials and developing additional materials and mechanisms for training staff and community professionals.

At the municipal level, local health departments provide public health services which complement those offered by the DPH. These services include:

- The identification and screening of children who are most at risk for lead exposures.
- Confirmatory testing and follow-up of children with elevated screening results and referrals to area health care professionals as necessary.
- Epidemiologic investigations, inspections and identification of sources of exposure.
- Providing risk reduction information to families of children identified with elevated blood lead levels and to those who may be at risk for lead exposures.

## BIRTH DEFECTS - PREVENTION SURVEILLANCE

### Summary

Advances in maternal and infant care have resulted in a steady decrease in infant mortality rates; however, the proportion of infant deaths attributed to birth defects has increased. Nationwide in 1986, the underlying cause of infant death was listed as birth defects for 8,005 infants (20.5%), while an additional 1,008 infants had this listed as a contributing cause, for a total of 23.3%.<sup>160</sup> Birth defects also contribute substantially to YPLL. In 1986, congenital anomalies were the fifth leading cause of years of potential life lost before the age of 65, accounting for approximately 5.4 % of all YPLL.<sup>161</sup> As DPH is developing a statewide surveillance system for birth defects, available data are limited.

### Mortality

An analysis of linked birth/infant death data for a 1991 United States cohort<sup>162</sup> indicated that the infant mortality rate due to birth defects was 1.8 per 1,000 live births. The rate for blacks (2.1 per 1,000) slightly exceeded that for whites (1.8 per 1,000). In Connecticut in 1992, the infant mortality rate due to birth defects was 1.7 per 1,000 live births. In contrast to the U.S. figures, this rate was highest for white births (1.8 per 1,000) followed by blacks (1.2 per 1,000), and others (0.7 per 1,000).

<sup>160</sup> U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention. Contribution of birth defects to infant mortality - United States, 1986. *Morbidity and Mortality Weekly Report*. 1989;38:633-635.

<sup>161</sup> U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention. Premature mortality due to congenital anomalies - United States, 1986. *Morbidity and Mortality Weekly Report*. 1988;37:505-506.

<sup>162</sup> Infant Deaths and Mortality Rates by Race of Mother and for 61 Selected Causes of Death and Birthweight: United States, 1991 Birth Cohort. (LFWK73). <http://www.cdc.gov/nchswww/datawh/statab/unpubd/mortabs/lfwk73.htm>

## Morbidity

There is no comprehensive national surveillance system for birth defects. Estimates on incidence of birth defects are based on data found in the Birth Defects Monitoring Program (BDMP) of the CDC. Birth defects contribute substantially to morbidity and disability of children. Of approximately 80,000 infants that are born with a major birth defect each year in the United States, approximately 6,000 die within the first 28 days of life and another 2,000 die during the next eleven months.<sup>163</sup> Children with birth defects account for 25-30 percent of pediatric hospital admissions. Those infants that survive with birth defects are affected with various degrees of disability; the estimated cost in the U.S. for medical care for children with birth defects exceeds \$1 billion annually.<sup>164</sup>

## Modifiable Risk Factors

Environmental and nutritional causes of birth defects have been postulated, but supporting data are limited. Folic acid is a key modifiable risk factor; folic acid supplementation before conception and during early pregnancy has been related to decreases in neural tube defects. The characterization of trends in birth defects, identification of risk factors and sentinel events, and development of intervention strategies will be addressed by the new Connecticut Birth Defects Prevention and Surveillance program at DPH.

## OCCUPATIONAL DEATHS, INJURIES, AND DISEASES

### Summary

Connecticut's overall occupational fatality rate (2.3 per 100,000 full-time worker equivalents) for 1992-1995 is lower than the U.S. year 2000 target<sup>165</sup> (4.0 per 100,000) (Table 3-34). However, the rate for the agriculture, forestry and fishing sector (22.5 per 100,000) exceeded the year 2000 target (9.5 per 100,000). Connecticut's construction sector had a lower rate (9.7 per 100,000) for the period than the year 2000 target (17 per 100,000). The average number of occupational fatalities for 1990-95 was 32 (Figure 3-82).

**Table 3-34**  
**Number and Rate of Fatal Occupational Injuries**  
**Connecticut, 1992-95**

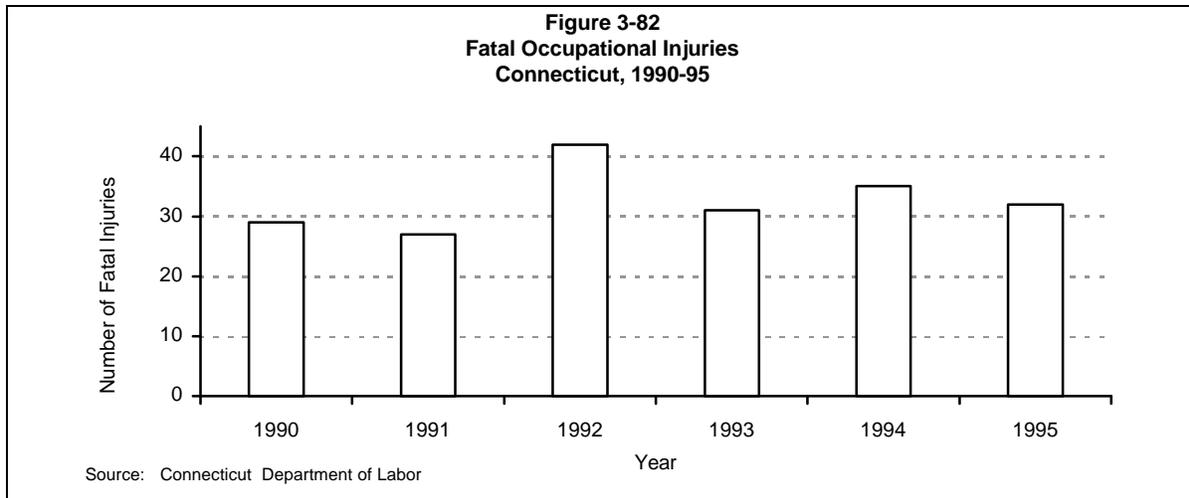
Industry	Number of Injuries by Year					Total	Rate <sup>a</sup>
	1992	1993	1994	1995			
<i>Private Industry</i>	37	28	31	30	126	2.5	
Agriculture, Forestry & Fishing	0	0	8	4	12	22.5	
Construction	7	0	6	6	19	9.7	
Manufacturing	9	5	2	3	19	1.6	
Transportation & Public Utilities	3	5	5	6	19	7.0	
Wholesale & retail trade	9	10	5	8	32	2.4	
Services	5	3	4	2	14	0.8	
Other	0	0	1	1	2	0.4	
<i>State and Local Government</i>	5	3	4	2	14	2.0	
<b>Total</b>	<b>42</b>	<b>31</b>	<b>35</b>	<b>32</b>	<b>140</b>	<b>2.3</b>	

<sup>a</sup> Rate is per 100,000 full-time worker equivalents for 1992-1995.  
Source: Connecticut Department of Labor

<sup>163</sup> Lynberg, Chavez, Edmunds, Mulinare. 650-7.

<sup>164</sup> Lynberg, Chavez, Edmunds, Mulinare. 650-7.

<sup>165</sup> U.S. Department of Health and Human Services, Public Health Service. *Healthy People 2000: National Health Promotion and Disease Prevention Objectives*. Washington, DC: Public Health Service. 1990:298.



Those most at risk for workplace fatalities are white males 25-44 years of age who are wage and salary workers. From 1992-1995, the most common types of workplace fatalities were transport incidents, assaults, and violent acts (Table 3-35). Industry sectors with non-fatal occupational illness and injury rates that exceeded the year 2000 target of 6,000 were: state and local government (13,100); agriculture, forestry & fishing (11,800); manufacturing (11,500); transportation & public utilities (10,500); construction (10,200); retail (8,500); wholesale (7,800); services (7,500); and mining (6,900)<sup>166</sup> Table 3-36.

**Table 3-35**  
**Number of Fatal Occupational Injuries by Event or Exposure**  
**Connecticut, 1992-95**

Event or Exposure	Year				Total	
	1992	1993	1994	1995	No.	Percent
Transport. incidents	9	10	19	13	51	36.4
Assaults & violent acts	10	10	8	8	36	25.7
Contact with objects and equipment	5	3	2	6	16	11.4
Falls	7	5	4	0	16	11.4
Exposure to harmful substances, environments	5	3	1	3	12	8.6
Other	6	0	1	2	9	6.4
<b>Total</b>	<b>42</b>	<b>31</b>	<b>35</b>	<b>32</b>	<b>140</b>	<b>99.9</b>

Source: Connecticut Department of Labor

<sup>166</sup> Rates were calculated as 100,000 full-time worker equivalents for each industry sector and target.

**Table 3-36  
Non-Fatal Occupational Illness and Injury  
Connecticut, 1994**

Type of Industry	Number of Workers	Injuries & Illnesses	Rate <sup>a</sup>		
			CT	U.S.	Target <sup>c</sup>
<i>All Industries (Total)</i>	1,501,800	111,400	9,000	N/A <sup>b</sup>	
<i>Private Industries (Total)</i>	1,326,100	93,800	8,500	8,400	6,000
Agriculture, Forestry & Fishing	13,600	1,300	11,800	10,000	8,000
Mining	700	100	6,900	6,300	6,000
Construction	49,500	4,500	10,200	11,800	10,000
Manufacturing	285,300	32,400	11,500	12,200	
Transportation & Public Utilities	68,400	6,800	10,500	9,300	6,000
Wholesale	76,100	5,700	7,800	7,700	
Retail	259,400	15,700	8,500	7,900	
Finance, Insurance & Real Estate	135,600	3,100	2,600	2,700	
Services	430,400	24,200	7,500	6,500	
<i>State &amp; Local Government</i>	175,600	17,600	13,100	N/A <sup>b</sup>	

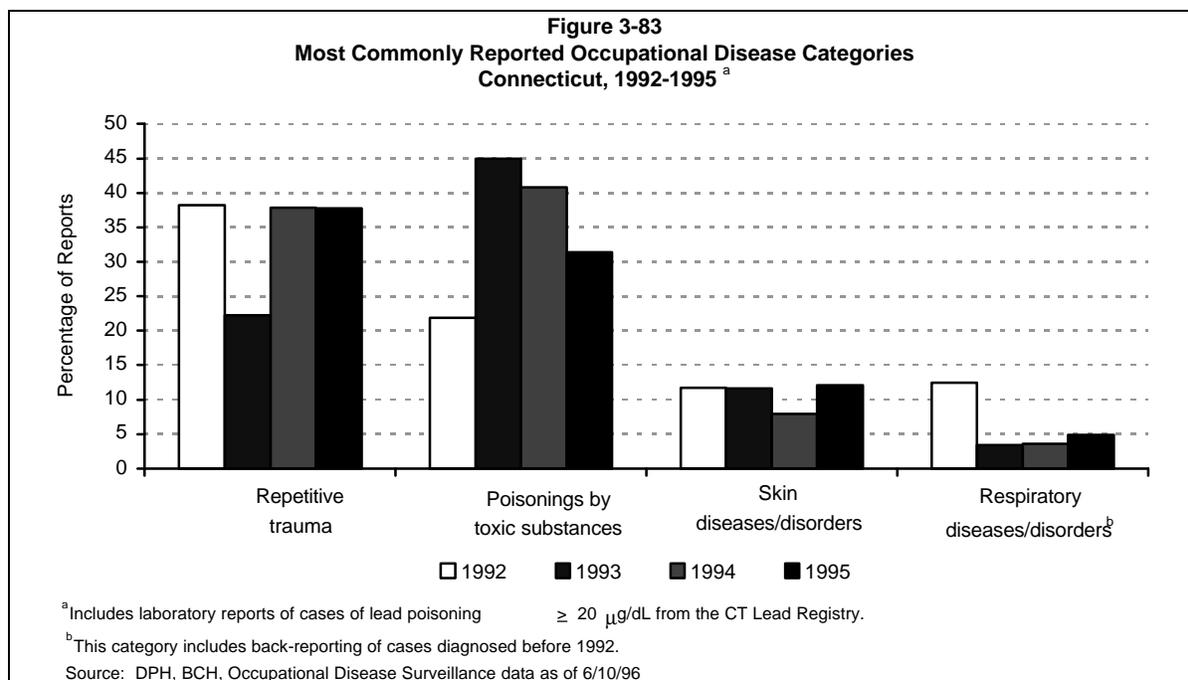
<sup>a</sup>Rates are per 100,000 full-time workers.

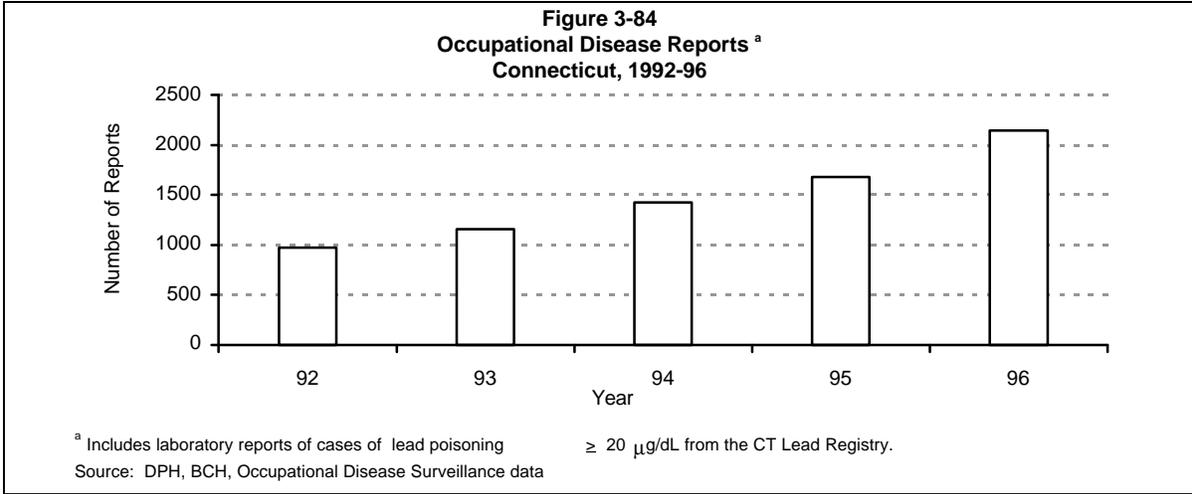
<sup>b</sup>There are no national data for federal public sector employees, because OSHA does not cover federal employees in all states. The U.S. data therefore include only employees in private industry.

<sup>c</sup>The target is a national goal for the year 2000.

Sources: Bureau of Labor Statistics Annual Survey; U.S. Public Health Service, *Healthy People 2000*.

The four types of occupational illnesses most reported to the Occupational Disease Surveillance System from 1992-95 were repetitive trauma disorders, poisonings by toxic substances, skin diseases/disorders, and respiratory diseases/disorders (Figure 3-83). The number of reports has been increasing each year (Figure 3-84) because outreach efforts have made more physicians aware of the reporting requirements; however, the relative proportions of reports in each of the four major categories has remained fairly stable.





Potential for Intervention

Physicians have been required to report occupational diseases since 1949. The DPH Occupational Health Surveillance Program (OHSP) conducts surveillance on occupational diseases. The OHSP investigates clusters of occupational diseases, including lead and mercury toxicity, asthma, silicosis, skin diseases/disorders, and repetitive trauma disorders. DPH engages in educational efforts with physicians and workers to reduce the top four categories of reported occupational illnesses, i.e., repetitive trauma disorders, poisonings by toxic materials, skin diseases/disorders, and respiratory diseases/disorders. Education strategies include distribution of fact sheets and presentations to workers, physicians, occupational nurses, and other interested parties.

# CHAPTER 4

## HEALTH SERVICES DELIVERY and UTILIZATION

### INTRODUCTION

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This chapter gives an overview of Connecticut's health services delivery system. The section on hospitalizations provides information on hospital use and resource consumption from which an insight can be gained regarding utilization patterns and morbidity.

Other chapter sections provide an assessment of current health care services and facilities in Connecticut and projections of future needs, in the context of the dynamic health care environment and the shifting demographic and health characteristics of the population. The assessment is focused primarily on the areas of acute care, long-term care, and home health care because data were available in these areas. Lack of available data precluded detailed analyses of outpatient, hospice, subacute, rehabilitative, and emergency medical services, all of which are necessary to understand Connecticut's health care delivery system comprehensively. However, some of these topics are briefly discussed in this chapter along with school-based health centers and community health centers which provide primary care at the local level. Included also is a brief discussion about the workforce who deliver the health care services.

The sections of this chapter pertaining to service capacity resulted from an agreement between the Department of Public Health (DPH) and the Office of Health Care Access (OHCA) for DPH to complete a statewide health facilities plan as part of the state health plan.

### TRENDS AFFECTING USE OF FACILITIES

Several major "environmental" trends are gradually changing the use of health care facilities. These trends are discussed in more detail in the chapter sections.

1. The penetration of managed care is a major factor in the declining use of acute care facilities.
2. Hospital consolidation is occurring whereby either hospitals are closing or their services are becoming more limited. Not only are hospitals consolidating but mergers and affiliations of a variety of health care institutions are occurring. Therefore, not all hospitals will continue to provide a full range of acute care services.
3. Utilization of ambulatory surgical facilities will continue to increase in importance as more procedures become safe to be performed on an outpatient basis, further reducing the use of acute care facilities. In addition, ambulatory surgical facilities are increasing their hours of operation to accommodate the growing demand for their services.
4. In an effort to reduce costs, home health care services will continue to grow as a means of reducing the utilization of hospitals and nursing homes.

## HEALTH CARE SERVICE TRENDS

Trends affecting health care service delivery include the following:

1. Increasing emphasis will be placed on preventive services and access to primary care:
  - a) to reduce the risk of people developing diseases such as heart disease and cancer;
  - b) to enable people to control chronic conditions such as asthma and diabetes;
  - c) to provide more comprehensive prenatal care leading to healthier babies;
  - d) to immunize more completely against infectious diseases; or
  - e) to provide health education and wellness programs.
2. Home nursing care is becoming more desirable for the chronically sick, disabled, and elderly.
3. With the aging population, there is an increasing need for geriatric medicine and services to meet the growing health needs of seniors.
4. There is an increasing demand for an integrated service approach for more effective case management, whether to manage a chronic disease like diabetes or to enhance the quality of end-of-life care.
5. Consumers' choices in terms of health care practitioners, services, or institutions are limited based on the health care benefit system within which the consumer is enrolled.
6. The use of technicians to perform functions previously performed by licensed health care professionals is growing.

## REGULATION OF HEALTH CARE SERVICES

### Certificate of Need

Connecticut established a Certificate of Need (CON) program in 1973 to limit the expansion and duplication of unnecessary technology and health care services and programs, and to preserve or increase access to health care by preventing the elimination of needed facilities and services. A CON is a formal statement by a state agency that a health care facility, medical equipment purchase, or new or expanded service is needed, or that a decrease in or termination of a service will not have an adverse effect on access. The CON program is based on the premise that the marketplace for these facilities, equipment, or services is imperfect, and that inefficient supply may result in the absence of appropriate regulatory control. The purpose of the CON program is to limit inefficient supply and unnecessary expenditures. However, this purpose has fallen largely out of favor in the current market-driven managed care environment. Already CON has been abolished in thirteen states.<sup>1</sup> The impact of the changing health care environment on Connecticut's health care facilities is discussed later in this chapter.

Connecticut's CON program is regulated by two state agencies. The Department of Social Services (DSS) operates the program for nursing homes, homes for the aged, and rest homes. OHCA administers the CON program for all other health care facilities. Health Maintenance Organizations providing outpatient services and home health agencies are exempt from CON review for capital expenditures or the introduction of new services. Community health centers proposing new or additional services or functions are also exempt from CON review if at least one-third of the project cost is State financed or they receive funds from DPH and are located in medically underserved areas, health professional shortage areas, or in areas with medically underserved populations.

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<sup>1</sup> Moore, DJ. Certificate of need: gone in many states but not dead yet. *Modern Healthcare* 1997 Aug; 27(32): 32-36.

## Licensure & Certification

The DPH Bureau of Regulatory Services provides licensure and certification for health care facilities and health and health-related professions to promote the delivery of high quality health care and services. The Division of Health Systems Regulation is responsible for the regulation of health care facilities, including the certification of facilities as being eligible for Medicare and Medicaid reimbursement. They are also responsible for the licensure, certification, and registration of health care professionals and of emergency medical personnel and providers.

## GEOGRAPHIC UNITS OF ANALYSIS

Discussion of the health of Connecticut's residents implies that the measure of health will be population based. The basis of the population, however, can be one of many types of geographic regions. Examples of geographic areas include, but are not limited to, the state as a whole, counties, towns, and "service regions," which can be defined in a variety of ways.

One type of service region was developed by Connecticut's Office of Policy and Management (OPM). They developed "Uniform Service Regions" (USRs) based upon criteria such as size, population distribution, facility locations, transportation accessibility, federal requirements, and existing regional cooperative efforts. USRs were created for planning the distribution of funds and services related to health and human services. Originally (1992) OPM developed six Uniform Service Regions, but by early 1994 the service regions were redefined to include only five areas. The five areas are designated as follows: USR 1 is Southwest; USR 2 is South Central; USR 3 is Eastern; USR 4 in North Central; and USR 5 is Northwest. These planning areas are used for analysis purposes in this chapter when discussing service capacity for acute care, long term care, and home health care services.

## "YEARS" OF ANALYSIS

Although many data are collected on an annual basis, the twelve-month period covered by the data is not always a calendar year. Such is the case with the data used in this chapter. A fiscal year period beginning October 1 and ending September 30 of the following year is the "year of analysis" used for the acute care and long term care sections of this chapter. This is sometimes referred to as a federal fiscal year (FFY). For the home health care section, the fiscal year period begins on July 1 and ends on the following June 30. This is sometimes referred to as a state fiscal year (SFY). The population data used in the rate calculations were adjusted to the midpoints of the respective years of analysis.

## HOSPITALIZATIONS<sup>2</sup>

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Measurements of hospital use and resource consumption convey information relating to the general health of and health service delivery to the state's residents. Hospitalization statistics reveal the demographic, clinical, and financial characteristics of Connecticut's residents receiving inpatient services. Although there has been a dramatic shift in patient care to outpatient, home health, and alternative care settings as a result of technological advances and changes in the management of health care, inpatient data still provide a picture of health at the more severe end of the continuum of care.

### OVERVIEW

During fiscal year 1995, which encompasses October 1, 1994 through September 30, 1995, hereinafter referred to as 1995, there were 368,758 resident hospitalizations in Connecticut. These hospitalizations accounted for approximately 2 million patient days and charges in excess of \$3.8 billion. The most common reasons for hospitalization were mother and infant birth-related conditions. The leading illness-related causes included heart disease, digestive system disorders, mental health treatment, and cancer. Of those hospitalized for non-birth related conditions, adults 65 and over composed the largest portion. Consequently Medicare paid for the largest portion of hospitalizations of any primary payer.

### TRENDS

From 1991 to 1995 hospitalizations declined 2.2% as did the rate of hospitalization from 114.7 per 1,000 population to 112.1 per 1,000 (Table 4-1). The number of patient days decreased 21%. The trend is toward shorter lengths of stay whereby the median<sup>3</sup> length of stay dropped by one day and the percentage of one-day stays almost doubled in only four years. This trend is expected to continue as the pressure under a managed care environment to keep people out of the hospital continues to grow with a greater emphasis on care in alternative settings.

The percentage of hospitalizations for adults aged 65 and over has increased by 3% and is expected to continue to rise further as the population ages.

Although the median charge per hospitalization appears to have increased from \$4,743 to \$6,012, there has actually been a slight decrease in the median charge to \$4,530 when adjusted for inflation of 32.7%.<sup>4</sup>

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<sup>2</sup> Hospitalization refers to any discharge from a non-federal, short-stay, acute care general hospital in Connecticut as recorded in the state's hospital discharge abstract and billing data base maintained by the Office of Health Care Access. It is possible for a patient to have multiple hospitalizations. "Cause of hospitalization" refers to that condition that is chiefly responsible for occasioning the admission of a patient for care.

<sup>3</sup> Median was used instead of average because it is statistically more robust and less susceptible to outliers.

<sup>4</sup> Based upon DRI/McGraw Hill's hospital and related services Consumer Price Index.

**Table 4 - 1**  
**Selected Measures of Hospital Use for Connecticut Residents**

Measure of hospital use	FY 1991a	FY 1995
Hospitalization rate per 1,000 population	114.7	112.1
Number of days of patient care	2,544,476	2,010,318
Number of hospitalizations	377,062	368,758
Median length of stay in days	4.0	3.0
Percentage of one-day lengths of stay	12%	21%
Percentage age 65 and over	31%	34%
Unadjusted median charge per hospitalization	\$4,743	\$6,012

<sup>a</sup> John Dempsey Hospital data not available  
Source: OHCA, Hospital Discharge Abstract and Billing Data Base

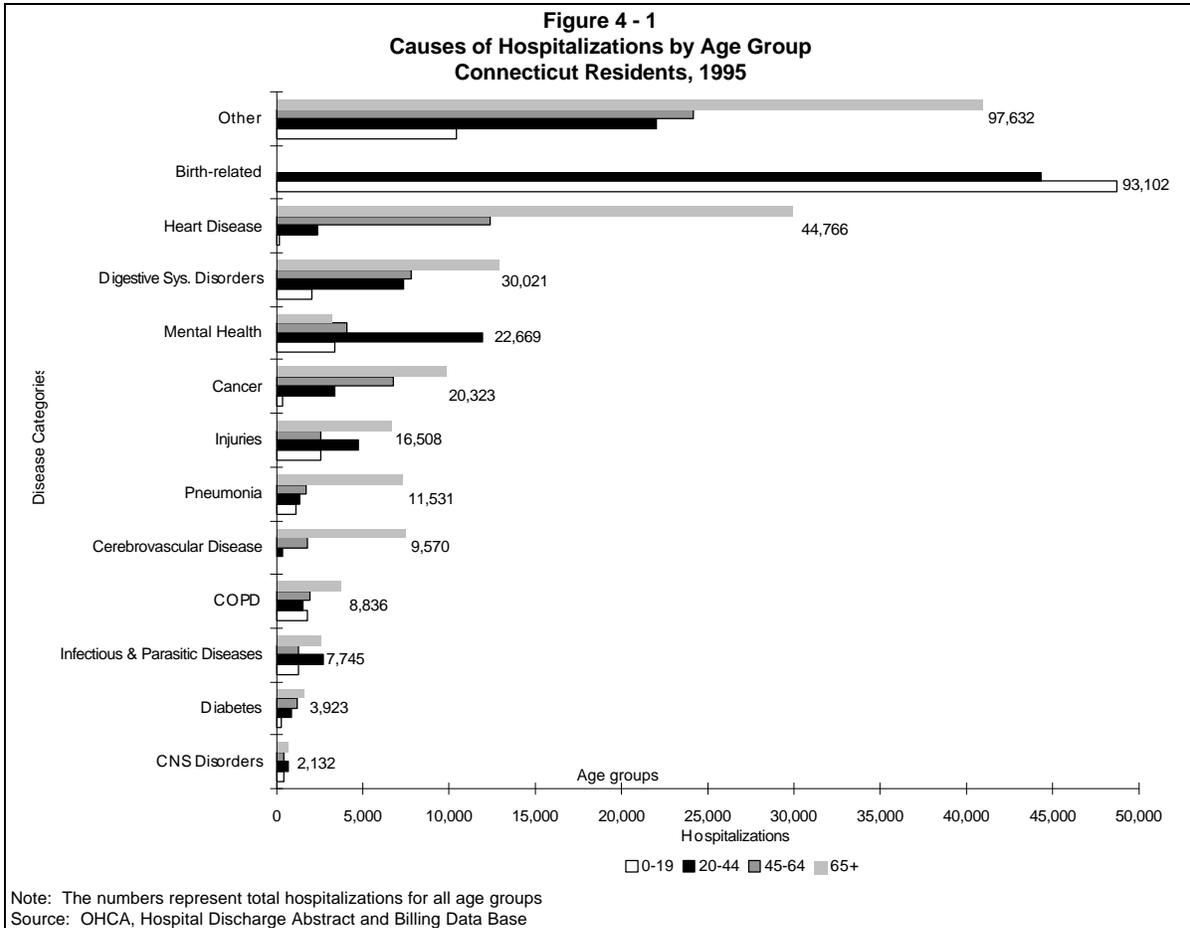
## LEADING CAUSES

Figure 4-1 displays the major causes of hospitalization of Connecticut residents during 1995. The leading cause of hospitalization was births and birth-related conditions. In 1995, birth-related hospitalizations accounted for 25% of Connecticut residents' hospitalizations but only 9% of the charges. Other leading causes include (in order of decreasing hospitalizations): heart disease, digestive system disorders, mental health treatment, cancer, injuries, pneumonia, cerebrovascular disease, chronic obstructive pulmonary disease (COPD), infectious and parasitic diseases, diabetes, and central nervous system (CNS) disorders. It should be noted that five of these causes (heart disease, cancer, cerebrovascular disease, COPD, and pneumonia) were also leading causes of death in the population. In 1995, these eleven other leading causes accounted for 48% of all hospitalizations and 62% of the total charges. "All Other Causes" encompasses numerous other causes accounting for 27% of all hospitalizations and 28% of the charges.

## GENDER AND AGE FACTORS

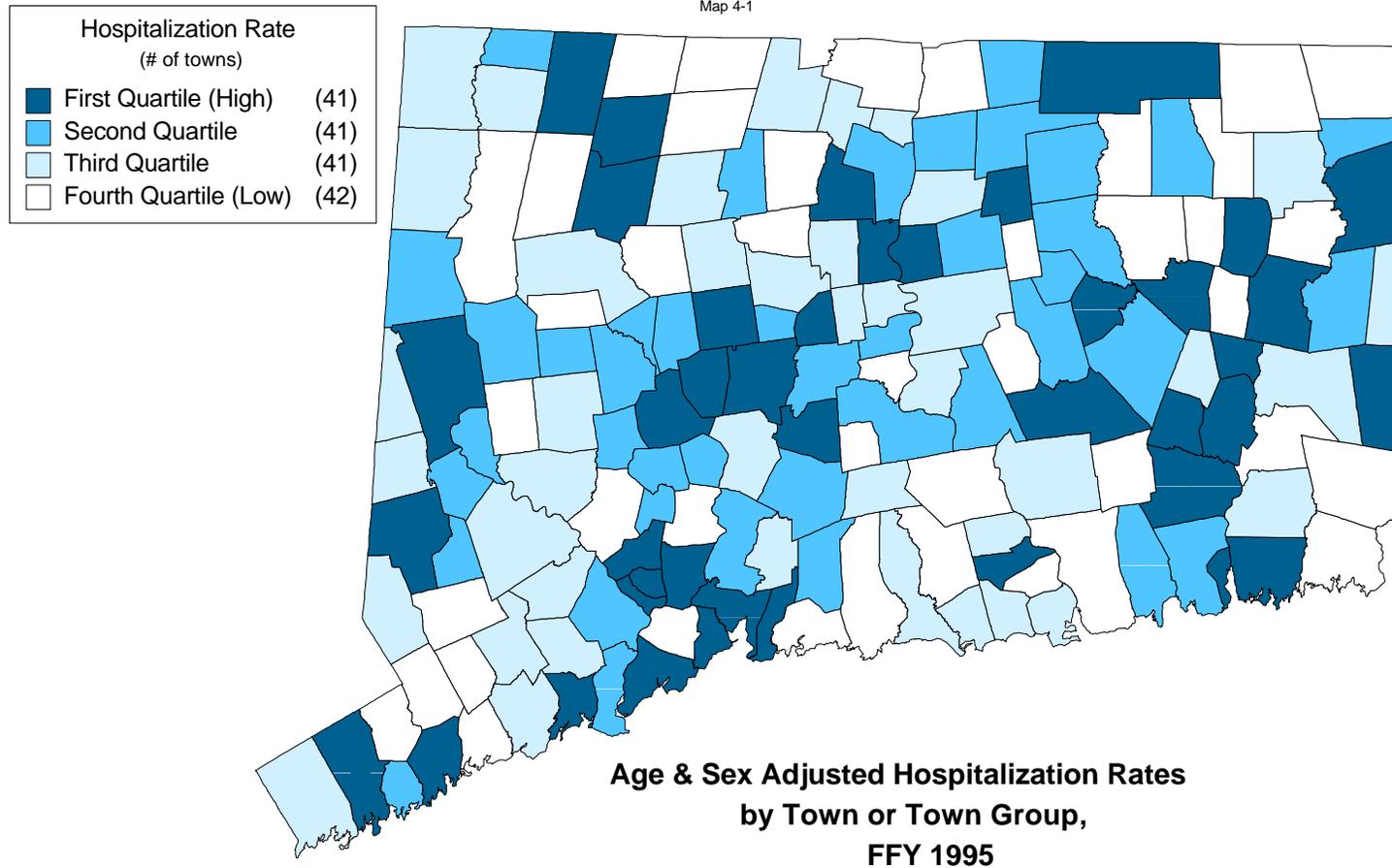
During 1995 females were hospitalized more often than males because of maternity-related conditions as well as female longevity and its associated illnesses. Females accounted for 59% of the hospitalizations, 53% of the charges, and 55% of the patient days. If maternity-related conditions are excluded, females accounted for 52% of the hospitalizations, 50% of the charges, and 52% of the patient days. Females were hospitalized at least 40% more often than males for cancer and COPD, and at least 20% more often for CNS disorders and digestive system disorders. Males were hospitalized 20% more often than females for heart disease, 90% more often for alcohol and drug abuse or dependence, and 2.5 times more often for HIV/AIDS.

Adults aged 65 and over accounted for 34% of all hospitalizations in 1995. If birth-related conditions were excluded, this age group composed 46% of the hospitalizations. They prevailed in nearly all the leading causes except birth-related conditions, mental health treatment, HIV/AIDS, and asthma. Over 60% of the patients hospitalized for heart disease, cerebrovascular disease, and pneumonia were in this age category. The hospitalization rate for injuries was four times greater for this age group than those under age 65. Nearly 70% of the HIV/AIDS hospitalizations were in the 30-44 age group with a median age of 37. Similarly over 50% of the hospitalizations for alcohol and drug abuse and dependence fell into the 25-44 age category, again with a median age of 37. Asthma hospitalizations peaked dramatically in children under five. The hospitalization rate for children under five was triple that of all other patients aged five and over.



Some of the variation in hospitalization rates among communities can be linked to the age and gender characteristics of their populations as explained above. By age-adjusting the hospitalization rates for each community, differences in the age composition of individual communities can be accounted for so that variation in the number of individuals being hospitalized cannot be attributed to one community having a larger elderly population than another. Likewise, gender affects an individual's risk of hospitalization for specific diseases. Adjusting the hospitalization rates for gender accounts for the differences in the rates which could otherwise be associated with differences in the gender composition among communities. Therefore, statistical adjustments for age and gender provide standardized rates that can be used to compare populations across geographic areas.

Map 4-1 is a map depicting the age-and-sex adjusted hospitalization rates by town of patient residence in Connecticut. Rates vary as much as seven-fold from highest (182 per 1,000 in Voluntown) to lowest (26 per 1,000 in Bethany). The statewide rate was 112 per 1,000 population. The lower rates in the towns bordering other states could be attributable to those residents receiving treatment in facilities outside of Connecticut. The cities of Hartford (161 per 1,000), New Haven (144 per 1,000), and Bridgeport (131 per 1,000), all had high hospitalization rates, which might indicate barriers to primary and preventive care. Because of the use of unlinked hospital discharge data, these rates reflect the total number of hospitalizations rather than the number of individuals, which could confound the results if the same patient had multiple hospitalizations for the same disease.



Note: The hospitalization rate is calculated per 1,000 population.  
Source: OHCA, FFY 1995 Connecticut Acute Care Hospital Discharge Data.

## CHARGES

While the number of hospitalizations provides a measure of the extent of disease in the state, other measures help to explain the economic scope of hospitalizations. Although hospital charges do not capture the true costs of hospitalizations nor the payments for those hospitalizations, they do indicate the magnitude of the economic burden to the state, keeping in mind that acute care is only one component of the health care delivery system. In 1995 hospitalization charges exceeded \$3.85 billion. The leading causes discussed previously accounted for \$2.75 billion. Of the leading causes, heart disease charges amounted to \$722 million, or 19% of the total charges in 1995. Second were digestive system disorders with 10% of the charges. The next most expensive conditions were birth-related conditions (9%), cancer (8%), and injuries (6%).

The financial burden can also be viewed as charges per hospitalization. This adjusts for the situation whereby a large number of hospitalizations accounts for a large proportion of the total charges, e.g., births. The median charge per birth-related hospitalization in 1995 was only \$2,302 whereas the median charge per heart disease hospitalization was \$10,313, over four times as much. Other illnesses with high charges per hospitalization were HIV/AIDS at \$12,717, septicemia at \$11,679, and cancer at \$10,032.

## PAYER

More than 50% of Connecticut's hospitalizations and 60% of the charges were publicly funded in 1995. Medicare was the payer with the largest percentage of hospitalizations (36%) and led in most of the leading causes. Medicare's hospitalizations accounted for 51% of the total charges. These proportions climb to 49% of hospitalizations and 56% of charges when birth-related hospitalizations are excluded. Medicare was the expected payer for more than 65% of hospitalizations for cerebrovascular disease, COPD excluding asthma, septicemia, heart disease, and pneumonia. The second largest payers were HMOs/PPOs with 18% of the hospitalizations and 13% of the charges. This indicates that managed care is definitely penetrating the marketplace. Medicaid, the third largest payer, accounted for 16% of the hospitalizations and 13% of the charges. Medicaid was the expected payer for 63% of HIV/AIDS hospitalizations, 53% of alcohol/drug abuse or dependence hospitalizations, and 37% of asthma hospitalizations.

## AMBULATORY-CARE-SENSITIVE HOSPITALIZATIONS

Ambulatory-care-sensitive (ACS) hospitalizations are those hospitalizations that might have been avoided if timely and effective disease management had been received previously in an outpatient setting such as primary care. ACS hospitalizations can be used to identify possible problems with the delivery of primary care services and also to identify areas for controlling costs.

Hospitalizations for *acute* conditions may be prevented with timely diagnosis and appropriate treatment. Bacterial pneumonia can be used as an example. If a symptomatic patient consults a physician in a timely fashion and follows an appropriate antibiotics regimen, the risk of hospitalization will be minimized; whereas failure to see a doctor or failure to take prescribed medications may result in a hospitalization for this condition.

Although *chronic* conditions such as asthma may not in themselves be prevented, they can be managed through periodic check-ups and proper use of medications or medical devices. However, problems gaining access to primary care or failure to understand the management of a chronic condition may lead to hospitalization.

Hospitalizations for those conditions listed in Table 4-2<sup>5</sup> were reviewed for adults aged 15-64 during 1995. Those over age 64 were excluded because it is assumed that greater access barriers exist for those younger than 65 who are less likely to have comprehensive insurance coverage than the elderly population who are covered by Medicare<sup>6</sup>. In addition, avoidance of hospitalization becomes increasingly difficult with aging and the progression of diseases.

**Table 4 - 2**  
**Ambulatory-care-sensitive Conditions**

Acute Conditions	Chronic Conditions
Bacterial pneumonia	Angina
Cellulitis	Asthma
Dehydration	Chronic Obstructive Pulmonary Disease
Gastroenteritis	Congestive heart failure
Kidney/Urinary Infections	Diabetes
	Hypertension

During 1995 ACS adult hospitalizations accounted for 8% of all hospitalizations including readmissions (Table 4-3). They accounted for 10% of total patient days and 9% of the total charges in the amount of \$153 million, which is not a trivial amount.

Because inadequate or inaccessible primary care is usually associated with low income communities, ACS hospitalization rates of those patients whose primary payer is Medicaid was compared to those whose payer is other than Medicaid. The rates for Medicaid patients were on average five times greater than those for other patients. Figure 4-2 compares the rates for Medicaid and non-Medicaid hospitalizations by type of ACS condition.<sup>7</sup> The condition with the highest rate was bacterial pneumonia; the rate was six times greater for Medicaid than non-Medicaid patients. Medicaid ACS hospitalizations accounted for approximately \$37 million or 25% of all ACS hospitalization charges.

**Table 4 - 3**  
**Summary Statistics for Ambulatory-Care-Sensitive Adult Hospitalizations**  
**Connecticut, 1995**

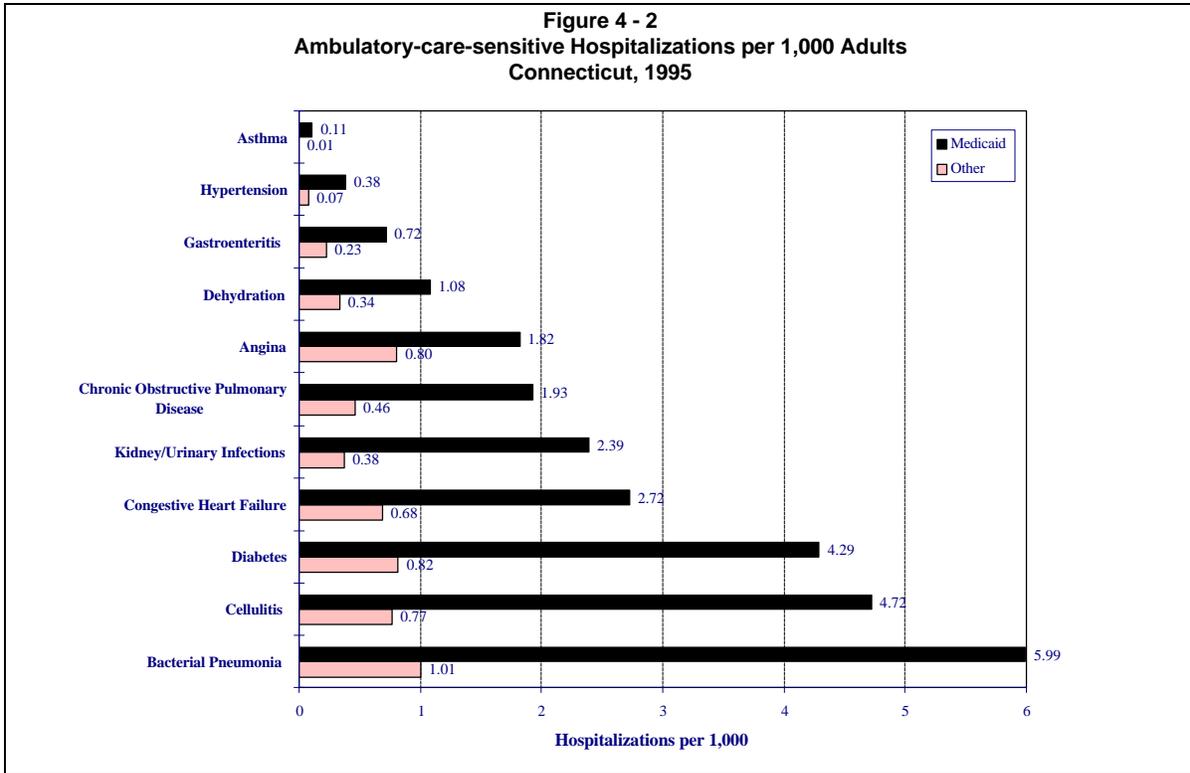
	Total Adult Hospitalizations	Ambulatory-care-sensitive Adult Hospitalizations	Percent of Total
Number of Hospitalizations	186,631	14,335	7.7
Patient Days	868,568	83,831	9.7
Charges	\$1,780,371,384	\$152,757,875	8.6

Source: OHCA, Hospital Discharge Abstract and Billing Data Base

<sup>5</sup> Massachusetts Rate Setting Commission. Preventable hospitalization in Massachusetts. 1994 Jan. Publication No.: 17497-81-2000-2-94.

<sup>6</sup> Billings, J. Consideration of the use of small area analysis as a tool to evaluate barriers to access. Proceedings of the Consensus Conference on Small Area Analysis; 1990 Oct 17-19; Columbia (MD). DHHS Publication No. HRS-A-PE-91-1 (A): 67-83.

<sup>7</sup> The Medicaid population data come from the Family Health Care Access Survey conducted by the Office of Health Care Access, 1995.



The statewide ACS hospitalization rate for adults aged 15-64 was 6.70 per 1,000 population. Table 4-4 displays the top ten rates by the town of patient's residence. Connecticut's three largest cities (Bridgeport, Hartford, and New Haven) had high rates. The reasons for this could be lack of insurance coverage, language or transportation barriers, or a lack of understanding and/or compliance on the management of chronic illnesses by patients and their families.<sup>8</sup>

**Table 4 - 4**  
**Top Ten Ambulatory-Care-Sensitive Hospitalization Rates by Town**  
**Connecticut, 1995**

Rank	Town	ACS Hospitalization Rates per 1,000	Rank	Town	ACS Hospitalization Rates per 1,000
1	Hartford	13.31	6	Killingly	10.50
2	New Haven	11.91	7	Sprague	10.45
3	Waterbury	11.33	8	Norwich	10.42
4	Voluntown	11.30	9	Bridgeport	10.31
5	Derby	10.87	10	Windham	9.83

<sup>8</sup> Massachusetts Rate Setting Commission, 4.

## CONCLUSION

Information about hospital use and resource consumption can be used to help identify populations who could benefit from education, lifestyle changes, prevention, intervention, and increased access to health care. Barriers to access can take on many forms such as inadequate insurance, lack of transportation, limited office hours, restricted provider acceptance, as well as educational, cultural, and lifestyle barriers.

The large number of births and birth-related conditions indicates the important need for education, prenatal care, postnatal care, newborn care, and subsequent childhood immunizations. On the other end of the spectrum, the increasing use of hospital care by the elderly signifies the need for expanding geriatric services. Already discussed were the specific diseases dominated by Medicare and Medicaid patients, by women versus men, and by various age groups. Discussion of ambulatory-care-sensitive hospitalizations points out the dramatic differences in utilization patterns between Medicaid and non-Medicaid patients. Towns with high hospitalization rates were also those with high ambulatory-care-sensitive hospitalization rates. Although there appear to be emerging patterns of utilization, it is not clear how barriers to access affect decisions to seek care, whether there is a breakdown in the delivery of primary care, or whether practice patterns are affecting utilization.

## ACUTE CARE SERVICES

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Fiscal year (FY)(October 1 through September 30) data were used to develop this section related to health care services provided by Connecticut's non-federal, short-stay acute care hospitals. This section was done in response to DPH's Memorandum of Agreement with OHCA to develop a statewide health facilities plan.

### CHANGES FROM FY1991 TO FY1995

FY 1991 data were previously analyzed by Arthur D. Little.<sup>9</sup> However, the data were reanalyzed so as to be more consistent with the methodology used to analyze the FY 1995 data. There were two significant methodological changes. First, the number of Uniform Service Regions (USRs) was reduced from six to five. Second, the mapping of Connecticut zip codes to towns was updated to incorporate newer zip codes. This significantly reduced the number of discharges allocated to the "unknown-Connecticut" town-of-residence category by assigning discharges to their appropriate towns of residence. The towns, in turn, compose the USRs.

Consolidation of providers arose during the four years between FY 1991 and FY 1995. The following mergers occurred in Connecticut: World War II Veterans Memorial Medical Center in Meriden with The Meriden-Wallingford Hospital; Park City Hospital in Bridgeport with Bridgeport Hospital; and Hartford Hospital with The Institute of Living in Hartford. Data from the Institute of Living were not previously collected because this was not an acute care facility, rather it was a psychiatric facility.

Since FY 1995 Hartford's Mount Sinai Hospital merged with St. Francis Hospital and Medical Center also in Hartford. In addition, Winsted Memorial Hospital in Winsted closed and the Connecticut Children's Medical Center in Hartford replaced the Newington Children's Hospital. Map 4-2 depicts the locations of the acute care facilities by USR as of 1995.

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<sup>9</sup> Arthur D. Little, Inc. Assessment of Current Health Care Facilities and Future Requirements, June 1993.

Despite the forgoing horizontal integration, the data indicate that between FY 1991 and FY 1995, the reduction in capacity did not keep pace with the reduction in utilization (Table 4-5). Staffed beds decreased by 16% from 9,525 in FY 1991 to 8,030 in FY 1995. But this is less than the 24% decrease that occurred in the number of days that patients spent in the hospitals, i.e., from 2,647,785 to 2,025,683 days. It should be noted that John Dempsey Hospital data were not available for FY 1991. For comparison purposes, the data were also excluded for FY 1995. John Dempsey Hospital accounts for 162 staffed beds and 58,930 patient days in FY 1995.

Much of the seemingly dramatic increase in the number of discharges receiving psychiatric service is attributable to the merger of the Institute of Living with Hartford Hospital.

Utilization, defined as patient days, decreased for all medical services. The medical services for which the largest utilization decreases occurred were maternity (-32%), newborn (-31%), and adult medical and surgical (-26%). The decreases for newborn and maternity were due to a decrease in the number of discharges as well as in the average length of stay whereas the decrease for adult medical and surgical was due predominantly to a decrease in the average length of stay from 7.2 to 5.6 days.

Utilization systematically decreased among the residents of the five USRs (Table 4-6). The largest decrease (-28%) occurred in the Northwest USR. The number of staffed beds in this USR decreased by only 20% from 1,518 to 1,212.

These downward trends in utilization are expected to continue as managed care continues to penetrate the market place, as hospitals continue to consolidate, and as alternative treatment settings such as outpatient, subacute, and home health reduce the need for acute care hospitalizations.

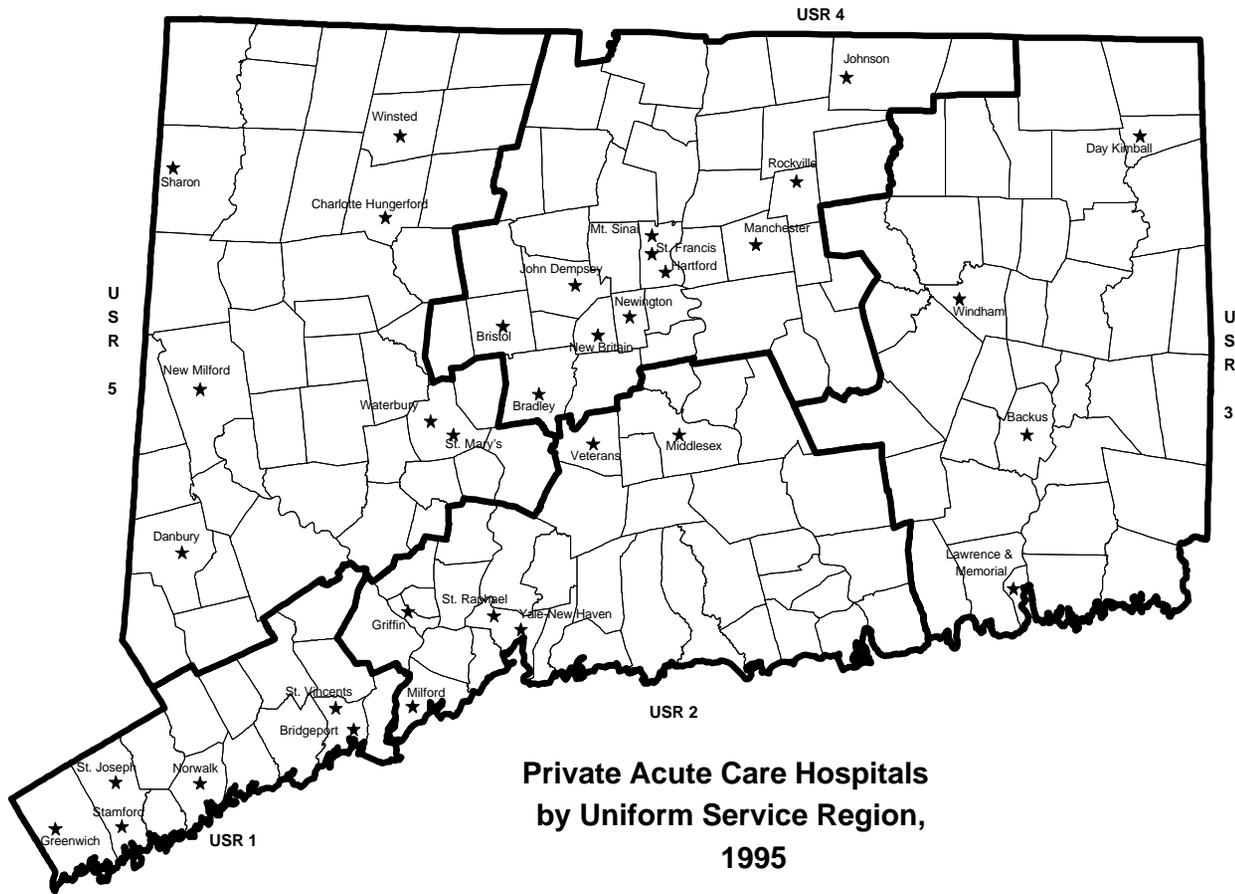
## FY 1995 INVENTORY, OCCUPANCY, AND UTILIZATION

In total, the 34 hospitals in Connecticut reported 10,919 licensed beds for the fiscal year 1995 (Table 4-7). However, only 8,192 (75%) were staffed and available for occupancy. The ratio of staffed to licensed beds was lowest for the pediatric services (71%) and highest for ICU/CCU (85%), psychiatric (86%), and NICU services (100%).

Average staffed bed occupancy varied by service from 42% for the newborn service to 72% for adult medical/surgical. ICU/CCU services also had a high occupancy (77%), as did NICU services (75%). Note that these occupancy rates were for Connecticut residents only. Actual occupancy rates are higher because of out-of-state and unknown-residence patient usage.

For FY 1995, utilization of acute care services was 611 days per 1,000 population. The adult medical/surgical utilization rate of 392 per 1,000 accounted for 64% of the days. Table 4-9 shows bed inventory and utilization data summarized by USR. The largest USRs (South Central and North Central) have the largest populations and number of hospitals. Utilization rates varied from 498 days per 1,000 population in the Eastern USR to 671 days per 1,000 population in the Southwest USR. If some residents of the Eastern USR received their services out-of-state, this would partially explain their lower utilization rate.

Map 4-2



Source: DPH, OPPE, 1997

## FY 1995 ACUTE CARE UTILIZATION RATES BY AGE/GENDER

Table 4-8 shows the FY 1995 Connecticut-resident utilization rates of the state's hospitals, grouped by type of medical service and age-gender cohort.

Utilization of the medical/surgical service increased dramatically with age. For example, utilization for the 20-44 age group was about 162 days per 1,000 population compared to about 1,657 patient days per 1,000 population for the over-65 age cohort. Caution must be taken when looking at the 0-4 and 5-19 age cohort utilization rates, because patients in these age groups were expected to use predominantly newborn and pediatric services. The over-65 population accounted for about 60% of medical/surgical patient days. Although total patient days were about 35% higher for females than males in the over-65 cohort, utilization per 1,000 population in the cohort was 14% greater for males than females, reflecting a higher survival rate for females in the age group. In fact, males utilized hospital services to a greater extent than females in all age cohorts except maternity and psychiatric services.

The difference between male and female utilization of ICU/CCU services was even more dramatic. Male utilization rates were about 58% greater than those of females in the age cohorts 20-44, 45-64, and 65+. However, total ICU/CCU patient days were about equal for males and females in the 65+ cohort, due to the greater number of females in the cohort.

The 65+ population was the primary user of rehabilitation services (72% of total patient days). Utilization per 1,000 for the 65+ cohort population was 36% higher for males than females.

Females used psychiatric services to a greater extent than males. Total patient days for females were 40% greater than for males.

## ACUTE CARE REQUIREMENTS FOR YEARS 2000 AND 2005

Projected patient days and average daily census by service for Connecticut residents for the years 2000 and 2005 are presented in Tables 4-9 and 4-10, respectively. The projections are presented for the total state and for each of the USRs. These projections should be considered a "base case," driven primarily by demographic changes.

The adjustment for the out-of-state patients, which included the unknown-Connecticut-town-of-residence patients, accounted for an additional 3.7% of patient days for the state, ranging from 2.0% for psychiatric patient days to 6.4% for the rehabilitation service. The adjustment varied from 2.0% for the Eastern USR to 7.3% for the Northwest USR. There was a large adjustment (17%) for rehabilitative services in USR 5 which was attributable mainly to patients receiving these services at Danbury Hospital.

Assuming utilization rates remain the same, the number of acute care patient days and the average daily census for Connecticut residents is projected to increase by 1.2% in 2000 compared to 1995. This is slightly larger than the anticipated overall increase in total population of 0.8%. The increases are greater than the overall average for ICU/CCU (2.9%), rehabilitation (3.3%), and medical/surgical service (2.8%), due to the increasing elderly population. The average census of maternity patients is expected to decrease by 6.0%, reflecting the 5.4% decrease in the female age cohort 15-44.

For the year 2005, the number of patient days is projected to increase by 3.0% over 1995, which again is somewhat larger than the projected increase in population of 2.2%.

Target occupancy factors are applied to the total projected average census to arrive at the number of "base case" beds required for 2000 and 2005, respectively. Target occupancy adjustments varied from 84% for medical/surgical services to about 60% for newborn, maternity, and pediatric services. The target occupancy for rehabilitation and psychiatric services, which tend to have longer lengths of stay than the other

acute care services and thus smaller percent census fluctuations, was set at 80%. The target occupancies for ICU/CCU and NICU, which are expensive to maintain and for which step-down and medical/surgical alternative services exist, were also set at 80%, close to current occupancy levels.

The “base case” projections show no need for additional *licensed* beds in the state through the year 2005. It may, however, be necessary to *staff* currently non-staffed beds in ICU/CCU in the future.

Regionally, the Eastern USR appears to need additional staffed beds. This result is somewhat misleading. It does indicate that the residents of the Eastern USR do require the various medical services. However, because the residents must be receiving some of these services at hospitals located outside of the Eastern USR, it may not be necessary to staff additional beds within the USR if its residents continue to obtain these services elsewhere.

### Adjusted Projections

A number of developments could affect the utilization rates used to develop the “base case” projections and, therefore, affect the need for acute care services. These developments can be grouped into three categories: technological, health care delivery, and health care management.

Technological developments such as surgical techniques that are less invasive (e.g. laparoscopy), cardiovascular techniques that reduce the need for open-heart surgery, more effective drugs, and faster diagnostic techniques will reduce hospital lengths of stay.

Health care delivery changes such as increased emphasis on prevention and primary care, increasing use of ambulatory and outpatient services, and more effective integration of hospital services will reduce the need for acute care hospitalizations.

The shift toward managed care as well as the development of outcomes research and treatment protocols and guidelines will also affect acute care utilization by encouraging use of primary care and other outpatient services.

The expected result of these trends and developments is a reduction in the need for acute care services, particularly for medical/surgical services. An additional result will be that those patients who are admitted, on average, will be in greater need of intensive services, such as provided in the ICU, CCU, and NICU. Other specialized services such as step down and intermediate care units (e.g., intermediate between ICU/CCU and conventional medical/surgical beds) should also experience increased usage.

To account for the trend in decreasing utilization of medical/surgical services, an average rate of about 5% reduction per year is projected through 2000. The adjustment factor is therefore estimated to be a 25% reduction in medical/surgical service utilization by the year 2000. An additional 10% reduction is projected from 2000 to 2005. These factors were extrapolated from trends that have been occurring since 1991.

Tables 4-9 and 4-10 present the adjusted projections for the years 2000 and 2005. Even with these downward adjustments, the projections indicate that in total there is already an adequate number of licensed beds for all services.

The greatest surplus of beds will occur in medical/surgical services, where it is expected that by 2005 there will be a need for only about 3,000 beds in the state, or 3,800 fewer licensed and 1,900 fewer staffed beds than exist in 1995.

**Table 4 - 5(a)**  
**Change in Utilization (Days) by Medical Services<sup>a</sup>**  
**Connecticut, FY 1991 and 1995**

Service	FY 1991		FY 1995		91-95 % Change of Days
	Discharges	Patient Days	Discharges	Patient Days	
Newborn	44,347	137,803	39,587	95,400	-30.8
Maternity	56,345	161,390	49,577	110,300	-31.7
Psychiatric	15,937	187,596	19,006	160,196	-14.6
Rehab	1,702	36,452	2,376	36,294	-0.4
Pediatric	20,290	105,179	18,221	87,536	-16.8
Med/Surg	245,481	1,777,954	235,347	1,318,873	-25.8
NICU	6,263	36,101	5,855	27,782	-23.0
ICU/CCU	54,862	205,310	54,645	189,302	-7.8
Total	445,227	2,647,785	424,614	2,025,683	-23.5

**Table 4 - 5(b)**  
**Change in Staffed Beds<sup>a</sup>**

FY 1991	FY 1995	91-95 % Change
9,525	8,030	-15.7

<sup>a</sup>Excludes John Dempsey Hospital Data

**Table 4 - 6**  
**Change in Utilization (Days) by USR<sup>a</sup>**  
**Connecticut, FY 1991 and 1995**

USR	FY 1991		FY 1995		91-95 % Change in Days
	Discharges	Patient Days	Discharges	Patient Days	
Southwest	85,020	541,381	80,642	419,888	-22.4
South Central	100,268	587,815	98,944	480,520	-18.3
Eastern	45,516	249,093	43,917	186,842	-25.0
North Central	121,539	722,541	114,305	544,486	-24.6
Northwest	75,346	443,644	71,460	320,768	-27.7
Out of State	17,538	103,311	15,346	73,179	-29.2
Total	445,227	2,647,785	424,614	2,025,683	-23.5

<sup>a</sup>Excludes John Dempsey Hospital Data

**Table 4 - 7**  
**Acute Care Inventory and Occupancy**  
**Connecticut, 1995**

Service	Staffed Beds	Licensed Beds	% Occupancy Staffed Beds	Ratio Staffed to Licensed (%)	Utilization Rate Days/1,000 Pop.
Newborn	619	784	42	79	29
Maternity	560	737	54	76	33
Psychiatric	706	822	65	86	51
Rehab	144	185	65	78	10
Pediatric	444	627	55	71	27
Med/Surg	4908	6838	72	72	392
NICU	152	152	75	100	13
ICU/CCU	659	774	77	85	56
Total	8,192	10,919	67	75	611

**Table 4 - 8**  
**Acute Care Utilization Rates**  
**Connecticut Residents, 1995**

Age	Patient Days		Cohort Population		Patient Days/Cohort Population x 1000	
	Male	Female	Male	Female	Male	Female
<b>Newborn Services</b>						
0-4	50,125	43,791	122,524	116,911	409.1	374.6
<b>Maternity Services</b>						
5-19		10,079		307,662		32.8
20-44		99,805		630,998		158.2
45-64		99		354,126		0.3
<b>Psychiatric Services</b>						
5-19	37,887	44,571	322,669	307,662	9.0	11.7
20-44	14,439	20,956	632,521	630,998	59.9	70.6
45-64	14,301	27,887	334,208	354,126	43.2	59.2
65+			183,942	283,442	77.7	98.4
<b>Rehabilitation Services</b>						
5-19	30	16	322,669	307,662	0.1	0.1
20-44	1,347	1,021	632,521	630,998	2.1	1.6
45-64	4,168	3,050	334,208	354,126	12.5	8.6
65+	11,486	13,000	183,942	283,442	62.4	45.9
<b>Pediatric Services</b>						
0-4	18,409	12,598	122,524	116,911	150.2	107.8
5-19	33,533	24,130	322,669	307,662	103.9	78.4
20-44	47	104	632,521	630,998	0.1	0.2
<b>Medical/Surgical Services</b>						
0-4	1053	532	122,524	116,911	8.6	4.6
5-19	4,876	3,991	322,669	307,662	15.1	13.0
20-44	103,991	100,745	632,521	630,998	164.4	159.7
45-64	151,790	148,205	334,208	354,126	454.2	418.5
65+	329,666	444,812	183,942	283,442	1792.2	1569.3
<b>NICU Services</b>						
0-4	22,816	18,651	122,524	116,911	186.2	159.5
<b>ICU/CCU Services</b>						
0-4	6,090	4,927	122,524	116,911	49.7	42.1
5-19	2,679	2,344	322,669	307,662	8.3	7.6
20-44	11,762	7,379	632,521	630,998	18.6	11.7
45-64	28,340	18,140	334,208	354,126	84.8	51.2
65+	52,420	51,668	183,942	283,442	285.0	182.3

**Table 4 - 9**  
**Acute Care Projected Beds**  
**Connecticut, 1995 to 2000**

Area/Item	Newborn	Maternity	Psychiatric	Rehab	Pediatric	Med/Surg	NICU	ICU/CCU	Total
Total State of Connecticut (Population 3,289,003)									
Staffed Beds (1995)	619	560	706	144	444	4,908	152	659	8,192
Licensed Beds (1995)	784	737	822	185	627	6,838	152	774	10,919
Patient Days (CT Residents)	93,938	109,983	166,536	34,118	88,821	1,289,661	41,512	185,749	2,010,318
Occupancy Rate (%) (Staffed)	41.58	53.81	64.63	64.91	54.81	71.99	74.82	77.22	67.23
Occupancy Rate (%) (Licensed)	32.83	40.89	55.51	50.53	38.81	51.67	74.82	65.75	50.44
Utilization (Days/1000 Pop)	28.6	33.4	50.6	10.4	27.0	392.1	12.6	56.5	611.2
Projected Patient Days (2000)	84,686	103,373	166,182	35,257	90,143	1,325,640	37,428	191,109	2,033,818
Average Daily Census	232	283	455	97	247	3,632	103	524	5,572
Out of State Adjustment (%)	2.54	2.71	2.03	6.38	2.74	3.86	2.90	5.32	3.69
Target Daily Census	238	291	465	103	254	3,772	106	551	5,778
Hospitals in the USR	31	31	27	10	27	33	8	33	
Target Occupancy Adjustment	0.58	0.60	0.80	0.80	0.61	0.84	0.80	0.80	
Beds Needed (2000)	410	481	581	128	419	4,478	132	689	7,318
Proj. Surplus/Deficit (Staffed)	209	79	125	16	25	430	20	-30	874
Proj. Surplus/Deficit (Licensed)	374	256	241	57	208	2,360	20	85	3,601
Trends Adjustment (%)	0	0	0	0	0	-25	0	0	
Adjusted Bed Projections	410	481	581	128	419	3,358	132	689	6,198
Proj. Surplus/Deficit (Staffed)	209	79	125	16	25	1,550	20	-30	1,994
Proj. Surplus/Deficit (Licensed)	374	256	241	57	208	3,480	20	85	4,721

AN ASSESSMENT OF HEALTH STATUS AND HEALTH SERVICES

Area/Item	Newborn	Maternity	Psychiatric	Rehab	Pediatric	Med/Surg	NICU	ICU/CCU	Total
Southwest USR (Population 627,454)									
Staffed Beds (1995)	138	120	120	69	78	1,016	28	124	1,693
Licensed Beds (1995)	181	170	123	93	132	1,547	28	135	2,409
Patient Days (CT Residents)	20,045	23,367	30,736	13,847	14,596	273,240	7,637	37,239	420,707
Occupancy Rate (%) (Staffed)	39.80	53.35	70.17	54.98	51.27	73.68	74.73	82.28	68.08
Occupancy Rate (%) (Licensed)	30.34	37.66	68.46	40.79	30.29	48.39	74.73	75.57	47.85
Utilization (Days/1000 Pop)	31.9	37.2	49.0	22.1	23.3	435.5	12.2	59.3	670.5
Projected Patient Days (2000)	17,313	19,364	31,443	6,837	17,378	255,868	7,653	37,022	392,878
Average Daily Census	47	53	86	19	48	701	21	101	1,076
Out of State Adjustment (%)	4.83	5.12	2.71	5.39	2.06	4.29	4.65	5.67	4.34
Target Daily Census	49	56	88	20	49	731	22	107	1,123
Hospitals in the USR	6	6	5	3	6	6	2	6	
Target Occupancy Adjustment	0.59	0.60	0.80	0.80	0.59	0.85	0.80	0.80	
Beds Needed (2000)	84	92	110	25	83	864	27	133	1,419
Proj. Surplus/Deficit (Staffed)	54	28	10	44	-5	152	1	-9	274
Proj. Surplus/Deficit (Licensed)	97	78	13	68	49	683	1	2	990
Trends Adjustment (%)	0	0	0	0	0	-25	0	0	
Adjusted Bed Projections	84	92	110	25	83	648	27	133	1,203
Proj. Surplus/Deficit (Staffed)	54	28	10	44	-5	368	1	-9	490
Proj. Surplus/Deficit (Licensed)	97	78	13	68	49	899	1	2	1,206

**Table 4 - 9 (continued)**  
**Acute Care Projected Beds**  
**Connecticut, 1995 to 2000**

Area/Item	Newborn	Maternity	Psychiatric	Rehab	Pediatric	Med/Surg	NICU	ICU/CCU	Total
<b>South Central USR (Population 767,774)</b>									
Staffed Beds (1995)	104	114	108	24	100	1,190	46	209	1,895
Licensed Beds (1995)	129	132	156	24	106	1,397	46	215	2,205
Patient Days (CT Residents)	13,215	26,173	33,002	6,401	22,297	324,128	14,089	46,465	485,770
Occupancy Rate (%) (Staffed)	34.81	62.90	83.72	73.07	61.09	74.62	83.91	60.91	70.23
Occupancy Rate (%) (Licensed)	28.07	54.32	57.96	73.07	57.63	63.57	83.91	59.21	60.36
Utilization (Days/1000 Pop)	17.2	34.1	43.0	8.3	29.0	422.2	18.4	60.5	632.7
Projected Patient Days (2000)	19,007	24,296	39,089	8,401	20,584	314,884	8,400	45,148	479,809
Average Daily Census	52	67	107	23	56	863	23	124	1,315
Out of State Adjustment (%)	0.32	0.69	1.56	5.51	3.90	3.29	0.79	6.26	3.22
Target Daily Census	52	67	109	24	59	891	23	131	1,357
Hospitals in the USR	6	6	6	2	3	6	1	6	
Target Occupancy Adjustment	0.60	0.63	0.80	0.80	0.69	0.86	0.80	0.80	
Beds Needed (2000)	88	107	136	30	85	1,037	29	164	1,677
Proj. Surplus/Deficit (Staffed)	16	7	-28	-6	15	153	17	45	218
Proj. Surplus/Deficit (Licensed)	41	25	20	-6	21	360	17	51	528
Trends Adjustment (%)	0	0	0	0	0	-25	0	0	
Adjusted Bed Projections	88	107	136	30	85	778	29	164	1,417
Proj. Surplus/Deficit (Staffed)	16	7	-28	-6	15	412	17	45	478
Proj. Surplus/Deficit (Licensed)	41	25	20	-6	21	619	17	51	788
<b>Eastern USR (Population 390,744)</b>									
Staffed Beds (1995)	77	56	59	14	24	383		44	657
Licensed Beds (1995)	86	77	60	14	38	591		49	915
Patient Days (CT Residents)	11,156	10,793	13,367	2,958	8,234	126,352	4,663	16,868	194,391
Occupancy Rate (%) (Staffed)	39.69	52.80	62.07	57.89	94.00	90.38		105.03	81.06
Occupancy Rate (%) (Licensed)	35.54	38.40	61.04	57.89	59.37	58.57		94.31	58.21
Utilization (Days/1000 Pop)	28.6	27.6	34.2	7.6	21.1	323.4	11.9	43.2	497.5
Projected Patient Days (2000)	9,650	12,659	19,466	3,807	10,983	145,584	4,265	21,032	227,446
Average Daily Census	26	35	53	10	30	399	12	58	623
Out of State Adjustment (%)	1.32	1.08	1.97	6.63	1.37	2.03	0.47	2.80	2.01
Target Daily Census	27	35	54	11	31	407	12	59	636
Hospitals in the USR	4	4	3	1	2	4		4	
Target Occupancy Adjustment	0.56	0.60	0.80	0.80	0.66	0.83	0.80	0.80	
Beds Needed (2000)	47	59	68	14	46	488	15	74	811
Proj. Surplus/Deficit (Staffed)	30	-3	-9	0	-22	-105	-15	-30	-154
Proj. Surplus/Deficit (Licensed)	39	18	-8	0	-8	103	-15	-25	104
Trends Adjustment (%)	0	0	0	0	0	-25	0	0	
Adjusted Bed Projections	47	59	68	14	46	366	15	74	689
Proj. Surplus/Deficit (Staffed)	30	-3	-9	0	-22	17	-15	-30	-32
Proj. Surplus/Deficit (Licensed)	39	18	-8	0	-8	225	-15	-25	226

**Table 4 - 9 (continued)**  
**Acute Care Projected Beds**  
**Connecticut, 1995 to 2000**

Area/Item	Newborn	Maternity	Psychiatric	Rehab	Pediatric	Med/Surg	NICU	ICU/CCU	Total
<b>North Central USR (Population 942,574)</b>									
Staffed Beds (1995)	193	188	314	25	180	1,595	68	172	2,735
Licensed Beds (1995)	258	242	349	40	270	2,259	68	229	3,715
Patient Days (CT Residents)	36,274	32,829	61,056	6,731	29,967	361,426	6,249	47,357	581,889
Occupancy Rate (%) (Staffed)	51.49	47.84	53.27	73.76	45.61	62.08	25.18	75.43	58.29
Occupancy Rate (%) (Licensed)	38.52	37.17	47.93	46.10	30.41	43.83	25.18	56.66	42.91
Utilization (Days/1000 Pop)	38.5	34.8	64.8	7.1	31.8	383.4	6.6	50.2	617.3
Projected Patient Days (2000)	23,696	29,560	47,816	10,295	25,005	385,763	10,471	55,424	588,030
Average Daily Census	65	81	131	28	69	1,057	29	152	1,611
Out of State Adjustment (%)	0.70	0.96	1.84	2.73	2.17	2.23	4.24	3.52	2.15
Target Daily Census	65	82	133	29	70	1,080	30	157	1,646
Hospitals in the USR	9	9	8	3	10	10	4	10	
Target Occupancy Adjustment	0.57	0.60	0.80	0.80	0.57	0.84	0.80	0.80	
Beds Needed (2000)	114	136	167	36	123	1,288	37	196	2,098
Proj. Surplus/Deficit (Staffed)	79	52	147	-11	57	307	31	-24	637
Proj. Surplus/Deficit (Licensed)	144	106	182	4	147	971	31	33	1,617
Trends Adjustment (%)	0	0	0	0	0	-25	0	0	
Adjusted Bed Projections	114	136	167	36	123	966	37	196	1,776
Proj. Surplus/Deficit (Staffed)	79	52	147	-11	57	629	31	-24	959
Proj. Surplus/Deficit (Licensed)	144	106	182	4	147	1,293	31	33	1,939
<b>Northwest USR (Population 560,457)</b>									
Staffed Beds (1995)	107	82	105	12	62	724	10	110	1,212
Licensed Beds (1995)	130	116	134	14	81	1,044	10	146	1,675
Patient Days (CT Residents)	13,248	16,821	28,375	4,181	13,727	204,515	8,874	37,820	327,561
Occupancy Rate (%) (Staffed)	33.92	56.20	74.04	95.46	60.66	77.39	243.12	94.20	74.05
Occupancy Rate (%) (Licensed)	27.92	39.73	58.01	81.82	46.43	53.67	243.12	70.97	53.58
Utilization (Days/1000 Pop)	23.6	30.0	50.6	7.5	24.5	364.9	15.8	67.5	584.5
Projected Patient Days (2000)	15,021	17,494	28,367	5,918	16,193	223,541	6,639	32,483	345,656
Average Daily Census	41	48	78	16	44	612	18	89	947
Out of State Adjustment (%)	7.38	6.98	2.29	16.67	3.67	8.22	5.08	7.20	7.32
Target Daily Census	44	51	79	19	46	663	19	95	1,016
Hospitals in the USR	6	6	5	1	6	7	1	7	
Target Occupancy Adjustment	0.58	0.59	0.80	0.80	0.58	0.83	0.80	0.80	
Beds Needed (2000)	77	86	99	24	79	799	24	119	1,307
Proj. Surplus/Deficit (Staffed)	30	-4	6	-12	-17	-75	-14	-9	-95
Proj. Surplus/Deficit (Licensed)	53	30	35	-10	2	245	-14	27	368
Trends Adjustment (%)	0	0	0	0	0	-25	0	0	
Adjusted Bed Projections	77	86	99	24	79	599	24	119	1,108
Proj. Surplus/Deficit (Staffed)	30	-4	6	-12	-17	125	-14	-9	104
Proj. Surplus/Deficit (Licensed)	53	30	35	-10	2	445	-14	27	567

**Table 4 - 10**  
**Acute Care Projected Beds**  
**Connecticut, 1995 to 2005**

Area/Item	Newborn	Maternity	Psychiatric	Rehab	Pediatric	Med/Surg	NICU	ICU/CCU	Total
<b>Total State of Connecticut (Population 3,289,003)</b>									
Staffed Beds (1995)	619	560	706	144	444	4,908	152	659	8,192
Licensed Beds (1995)	784	737	822	185	627	6,838	152	774	10,919
Patient Days (CT Residents)	93,938	109,983	166,536	34,118	88,821	1,289,661	41,512	185,749	2,010,318
Occupancy Rate (%) (Staffed)	41.58	53.81	64.63	64.91	54.81	71.99	74.82	77.22	67.23
Occupancy Rate (%) (Licensed)	32.83	40.89	55.51	50.53	38.81	51.67	74.82	65.75	50.44
Utilization (Days/1000 Pop)	28.6	33.4	50.6	10.4	27.0	392.1	12.6	56.5	611.2
Projected Patient Days (2005)	78,703	97,726	167,750	36,461	89,832	1,368,185	34,787	197,712	2,071,156
Average Daily Census	216	268	460	100	246	3,748	95	542	5,674
Out of State Adjustment (%)	2.54	2.71	2.03	6.38	2.74	3.86	2.90	5.32	3.69
Target Daily Census	221	275	469	106	253	3,893	98	570	5,884
Hospitals in the USR	31	31	27	10	27	33	8	33	
Target Occupancy Adjustment	0.57	0.60	0.80	0.80	0.60	0.84	0.80	0.80	
Beds Needed (2005)	387	460	586	133	418	4,610	123	713	7,429
Proj. Surplus/Deficit (Staffed)	232	100	120	11	26	298	29	-54	763
Proj. Surplus/Deficit (Licensed)	397	277	236	52	209	2,228	29	61	3,490
Trends Adjustment (%)	0	0	0	0	0	-35	0	0	
Adjusted Bed Projections	387	460	586	133	418	2,997	123	713	5,816
Proj. Surplus/Deficit (Staffed)	232	100	120	11	26	1,911	29	-54	2,376
Proj. Surplus/Deficit (Licensed)	397	277	236	52	209	3,841	29	61	5,103
<b>Southwest USR (Population 627,454)</b>									
Staffed Beds (1995)	138	120	120	69	78	1,016	28	124	1,693
Licensed Beds (1995)	181	170	123	93	132	1,547	28	135	2,409
Patient Days (CT Residents)	20,045	23,367	30,736	13,847	14,596	273,240	7,637	37,239	420,707
Occupancy Rate (%) (Staffed)	39.80	53.35	70.17	54.98	51.27	73.68	74.73	82.28	68.08
Occupancy Rate (%) (Licensed)	30.34	37.66	68.46	40.79	30.29	48.39	74.73	75.57	47.85
Utilization (Days/1000 Pop)	31.9	37.2	49.0	22.1	23.3	435.5	12.2	59.3	670.5
Projected Patient Days (2005)	16,097	18,177	31,316	6,924	17,732	259,037	7,117	37,617	394,017
Average Daily Census	47	53	86	19	48	701	21	101	1,079
Out of State Adjustment (%)	4.83	5.12	2.71	5.39	2.06	4.29	4.65	5.67	4.34
Target Daily Census	49	56	88	20	49	731	22	107	1,126
Hospitals in the USR	6	6	5	3	6	6	2	6	
Target Occupancy Adjustment	0.59	0.60	0.80	0.80	0.59	0.85	0.80	0.80	
Beds Needed (2005)	84	92	110	25	83	864	27	133	1,419
Proj. Surplus/Deficit (Staffed)	54	28	10	44	-5	152	1	-9	274
Proj. Surplus/Deficit (Licensed)	97	78	13	68	49	683	1	2	990
Trends Adjustment (%)	0	0	0	0	0	-35	0	0	
Adjusted Bed Projections	84	92	110	25	83	561	27	133	1,117
Proj. Surplus/Deficit (Staffed)	54	28	10	44	-5	455	1	-9	576
Proj. Surplus/Deficit (Licensed)	97	78	13	68	49	986	1	2	1,292

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**Table 4 - 10 (continued)**  
**Acute Care Projected Beds**  
**Connecticut, 1995 to 2005**

Area/Item	Newborn	Maternity	Psychiatric	Rehab	Pediatric	Med/Surg	NICU	ICU/CCU	Total
<b>South Central USR (Population 767,774)</b>									
Staffed Beds (1995)	104	114	108	24	100	1,190	46	209	1,895
Licensed Beds (1995)	129	132	156	24	106	1,397	46	215	2,205
Patient Days (CT Residents)	13,215	26,173	33,002	6,401	22,297	324,128	14,089	46,465	485,770
Occupancy Rate (%) (Staffed)	34.81	62.90	83.72	73.07	61.09	74.62	83.91	60.91	70.23
Occupancy Rate (%) (Licensed)	28.07	54.32	57.96	73.07	57.63	63.57	83.91	59.21	60.36
Utilization (Days/1000 Pop)	17.2	34.1	43.0	8.3	29.0	422.2	18.4	60.5	632.7
Projected Patient Days (2005)	17,499	22,955	39,449	8,679	20,444	324,789	7,735	46,675	488,225
Average Daily Census	48	63	108	24	56	890	21	128	1,338
Out of State Adjustment (%)	0.32	0.69	1.56	5.51	3.90	3.29	0.79	6.26	3.22
Target Daily Census	48	63	110	25	58	919	21	136	1,381
Hospitals in the USR	6	6	6	2	3	6	1	6	
Target Occupancy Adjustment	0.59	0.62	0.80	0.80	0.69	0.86	0.80	0.80	
Beds Needed (2005)	82	102	137	31	85	1,068	27	170	1,702
Proj. Surplus/Deficit (Staffed)	22	12	-29	-7	15	122	19	39	193
Proj. Surplus/Deficit (Licensed)	47	30	19	-7	21	329	19	45	503
Trends Adjustment (%)	0	0	0	0	0	-35	0	0	
Adjusted Bed Projections	82	102	137	31	85	694	27	170	1,328
Proj. Surplus/Deficit (Staffed)	22	12	-29	-7	15	496	19	39	567
Proj. Surplus/Deficit (Licensed)	47	30	19	-7	21	703	19	45	877
<b>Eastern USR (Population 390,744)</b>									
Staffed Beds (1995)	77	56	59	14	24	383		44	657
Licensed Beds (1995)	86	77	60	14	38	591		49	915
Patient Days (CT Residents)	11,156	10,793	13,367	2,958	8,234	126,352	4,663	16,868	194,391
Occupancy Rate (%) (Staffed)	39.69	52.80	62.07	57.89	94.00	90.38		105.03	81.06
Occupancy Rate (%) (Licensed)	35.54	38.40	61.04	57.89	59.37	58.57		94.31	58.21
Utilization (Days/1000 Pop)	28.6	27.6	34.2	7.6	21.1	323.4	11.9	43.2	497.5
Projected Patient Days (2005)	9,093	12,195	19,996	4,047	10,886	154,035	4,019	22,288	236,559
Average Daily Census	25	33	55	11	30	422	11	61	648
Out of State Adjustment (%)	1.32	1.08	1.97	6.63	1.37	2.03	0.47	2.80	2.01
Target Daily Census	25	34	56	12	30	431	11	63	661
Hospitals in the USR	4	4	3	1	2	4		4	
Target Occupancy Adjustment	0.56	0.59	0.80	0.80	0.66	0.84	0.80	0.80	
Beds Needed (2005)	45	57	70	15	46	514	14	78	839
Proj. Surplus/Deficit (Staffed)	32	-1	-11	-1	-22	-131	-14	-34	-182
Proj. Surplus/Deficit (Licensed)	41	20	-10	-1	-8	77	-14	-29	76
Trends Adjustment (%)	0	0	0	0	0	-35	0	0	
Adjusted Bed Projections	45	57	70	15	46	334	14	78	659
Proj. Surplus/Deficit (Staffed)	32	-1	-11	-1	-22	49	-14	-34	-2
Proj. Surplus/Deficit (Licensed)	41	20	-10	-1	-8	257	-14	-29	256

**Table 4 - 10 (continued)**  
**Acute Care Projected Beds**  
**Connecticut, 1995 to 2005**

Area/Item	Newborn	Maternity	Psychiatric	Rehab	Pediatric	Med/Surg	NICU	ICU/CCU	Total
<b>North Central USR (Population 942,574)</b>									
Staffed Beds (1995)	193	188	314	25	180	1,595	68	172	2,735
Licensed Beds (1995)	258	242	349	40	270	2,259	68	229	3,715
Patient Days (CT Residents)	36,274	32,829	61,056	6,731	29,967	361,426	6,249	47,357	581,889
Occupancy Rate (%) (Staffed)	51.49	47.84	53.27	73.76	45.61	62.08	25.18	75.43	58.29
Occupancy Rate (%) (Licensed)	38.52	37.17	47.93	46.10	30.41	43.83	25.18	56.66	42.91
Utilization (Days/1000 Pop)	38.5	34.8	64.8	7.1	31.8	383.4	6.6	50.2	617.3
Projected Patient Days (2005)	22,107	27,981	48,277	10,646	24,549	398,182	9,770	57,287	598,799
Average Daily Census	61	77	132	29	67	1,091	27	157	1,641
Out of State Adjustment (%)	0.70	0.96	1.84	2.73	2.17	2.23	4.24	3.52	2.15
Target Daily Census	61	77	135	30	69	1,115	28	162	1,676
Hospitals in the USR	9	9	8	3	10	10	4	10	
Target Occupancy Adjustment	0.57	0.59	0.80	0.80	0.57	0.84	0.80	0.80	
Beds Needed (2005)	108	130	168	37	121	1,326	35	203	2,129
Proj. Surplus/Deficit (Staffed)	85	58	146	-12	59	269	33	-31	606
Proj. Surplus/Deficit (Licensed)	150	112	181	3	149	933	33	26	1,586
Trends Adjustment (%)	0	0	0	0	0	-35	0	0	
Adjusted Bed Projections	108	130	168	37	121	862	35	203	1,665
Proj. Surplus/Deficit (Staffed)	85	58	146	-12	59	733	33	-31	1,070
Proj. Surplus/Deficit (Licensed)	150	112	181	3	149	1,397	33	26	2,050
<b>Northwest USR (Population 560,457)</b>									
Staffed Beds (1995)	107	82	105	12	62	724	10	110	1,212
Licensed Beds (1995)	130	116	134	14	81	1,044	10	146	1,675
Patient Days (CT Residents)	13,248	16,821	28,375	4,181	13,727	204,515	8,874	37,820	327,561
Occupancy Rate (%) (Staffed)	33.92	56.20	74.04	95.46	60.66	77.39	243.12	94.20	74.05
Occupancy Rate (%) (Licensed)	27.92	39.73	58.01	81.82	46.43	53.67	243.12	70.97	53.58
Utilization (Days/1000 Pop)	23.6	30.0	50.6	7.5	24.5	364.9	15.8	67.5	584.5
Projected Patient Days (2005)	13,907	16,419	28,712	6,165	16,221	232,144	6,147	33,845	353,560
Average Daily Census	38	45	79	17	44	636	17	93	969
Out of State Adjustment (%)	7.38	6.98	2.29	16.67	3.67	8.22	5.08	7.20	7.32
Target Daily Census	41	48	80	20	46	688	18	99	1,040
Hospitals in the USR	6	6	5	1	6	7	1	7	
Target Occupancy Adjustment	0.57	0.59	0.80	0.80	0.58	0.83	0.80	0.80	
Beds Needed (2005)	72	82	101	25	79	827	22	124	1,332
Proj. Surplus/Deficit (Staffed)	35	0	4	-13	-17	-103	-12	-14	-120
Proj. Surplus/Deficit (Licensed)	58	34	33	-11	2	217	-12	22	343
Trends Adjustment (%)	0	0	0	0	0	-35	0	0	
Adjusted Bed Projections	72	82	101	25	79	538	22	124	1,043
Proj. Surplus/Deficit (Staffed)	35	0	4	-13	-17	186	-12	-14	169
Proj. Surplus/Deficit (Licensed)	58	34	33	-11	2	506	-12	22	632

## AMBULATORY SURGERY FACILITIES

Ambulatory surgery (same-day surgery) is currently performed in hospital owned or operated outpatient facilities, in free-standing ambulatory surgical centers, or in physicians' offices.

A recent Strategic Marketing Group (SMG) newsletter projects that hospitals will capture 73.4% of the surgical market in 1997, down from the 79.3% of the market hospitals experienced in 1994. SMG expects that hospitals will perform over 14 million outpatient surgical procedures during 1997, or 57% of all surgical procedures performed in hospitals.<sup>10</sup>

Nationally, free-standing surgical center utilization increased by 11% (2.9 million to 3.2 million procedures) between 1992 and 1994, compared with a 29% increase between 1989 and 1991. The total number of free-standing centers operating nationwide, grew from 1,690 to 1,720 centers (2%) between 1992 and 1994, representing a dramatic slowing from the 14% growth in new centers between 1990 and 1991.<sup>11</sup>

During 1995, the five most common surgical procedures performed on an outpatient basis were: ophthalmological (28.1%), gastroenterological (11.2%), gynecological (14.1%), orthopedic (9.2%), and ear/nose/throat (8.8%).<sup>12</sup> As additional, less invasive surgical techniques are developed, more hospital inpatient surgeries will be shifted into the ambulatory/outpatient surgery market. Managed care and reimbursement pressures will shift some of these procedures into free-standing centers.

As of September, 1997, a total of 16 licensed and/or certified free-standing ambulatory surgical centers were providing services in Connecticut as listed in Table 4-11.

**Table 4 - 11**  
**Free-Standing Ambulatory Surgical Centers**  
**Connecticut, September 1997**

Name	Location	Licensed - Certified
Bridgeport Surgical Center	Bridgeport	L, C
CT Surgery Center	Hartford	L, C
Danbury Surgical Center	Danbury	L, C
Hartford Surgical Center	Hartford	L, C
Johnson Surgery Center	Enfield	L, C
Middlesex Surgical Center	Middletown	L, C
Naugatuck Valley Surgical Center. Ltd.	Waterbury	L, C
Stamford Surgical Center	Stamford	L, C
Waterbury Outpatient Surgical Center	Waterbury	L
YNHASC Women's Surgical Center	New Haven	L, C
YNHASC Temple Surgical Center	New Haven	L, C
Eye Surgery Center	Bloomfield	C
Opticare	Bridgeport	C
Opticare	Norwalk	C
Opticare	Waterbury	C
Connecticut Foot Surgery Center	Milford	C

Source: DPH, Bureau of Regulatory Services, License and Certification Division

## DATA COLLECTION

The State of Connecticut does not collect patient-level outpatient data. Currently, there are insufficient data available to truly understand how outpatient surgical care is being delivered in Connecticut.

<sup>10</sup> Tracking Trends: Hospitals, SMG Marketing Group, Inc., <http://www2.interaccess.com/smg/hosp.htm>. (4 April 97):1-3.

<sup>11</sup> AHA News (Graphic). Growth of freestanding ambulatory surgical centers and procedures performed, 1984-1994, (5 Aug 96):6.

<sup>12</sup> Trends in outpatient surgery. *Medical Interface*, (Aug 95):76, 79.

Efforts were made to analyze hospital outpatient data from the Connecticut Hospital Association (CHA) Cost Reports collected by OHCA. However, these data were found to be too inconsistent to perform meaningful comparisons either among hospitals within one year or within a hospital across several years.

Based upon annual-reporting hospital data filed with OHCA, a total of 186,239 ambulatory and outpatient surgical procedures were provided by the state's 34 acute care hospitals during the period October 1, 1994 to September 30, 1995. These procedures consisted of 130,809 ambulatory surgery procedures and 55,430 outpatient surgery procedures.

## LONG TERM CARE

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### INTRODUCTION

The long term care delivery system is in a state of flux. Traditional definitions and boundaries of community and institutional care, and the personnel who deliver chronic care services in these settings are blurring. New mechanisms for the delivery of care are emerging. People with functional limitations who once might have gone to a nursing facility now have alternatives such as home care, assisted living, and adult day care.

### HOME AND COMMUNITY-BASED SERVICES

Home health care has emerged as a multifaceted source of services ranging from intravenous infusion of medications to physical therapy. Between 1979 and 1990, the number of home health agencies providing Medicare services doubled. The number of agencies that cater to private payers also increased.<sup>13</sup>

Home and community-based services are provided in non-institutional settings. They may be provided through informal or formal support. Informal care is provided by family and friends. Formal care is given by paid providers. The level of formal support increases with age, functional impairment, and income. People who live alone use more formal support. More women than men use formal support partly because of their longer life expectancy.

The geographic dispersion of families and smaller family sizes adversely affect the availability of informal caregivers. In addition, the role of women as traditional providers of home care to relatives has decreased since many women are now in the work force. Workplace support (elder care) in the form of leave policies, alternative work schedules, and referral services may help employed caregivers.

### CONNECTICUT HOME CARE PROGRAM (CHCP)

The CHCP is an alternative for individuals at risk of nursing facility placement. The program is housed in the DSS Alternate Care Unit. The program provides services to assist in sustaining elders, aged 65 and older, in the community. However, funds are limited so not all elderly who are eligible for services receive them. For example, in 1995 the DSS Alternate Care Unit screened 13,044 applicants of whom 38% were referred for assessment, but only 25% were accepted into the program.

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<sup>13</sup> The Robert Wood Johnson Foundation. Chronic care in America: a 21st century challenge. Princeton (NJ): The Foundation, 1996.

The informal services provided most frequently to CHCP clients include financial management, household management, supervision, shopping, personal care, and safety checks.

## SUPPORTIVE HOUSING ARRANGEMENTS

Supportive housing arrangements, such as congregate housing, serve individuals who do not need intensive nursing services. They serve frail elderly who can live independently but need help performing certain daily living activities such as housekeeping and personal care. Congregate housing projects usually consist of private living quarters and common dining areas with at least one meal a day and some personal care services being provided. The State's 21 congregate housing projects have about 870 units housing 900 people.

Individuals are eligible to live in State-assisted congregate housing projects if they are 62 years of age or older, meet certain income limits, and meet other criteria related to physical and functional abilities and daily living needs.

## NURSING FACILITIES

Nursing facilities provide personal and skilled nursing care 24 hours per day. Nursing facility care is needed when an individual has a condition that requires 24-hour supervision, substantial needs based on activities of daily living (ADL) or cognitive status, inadequate informal support, or insufficient financial resources to pay for home and community-based services.

The DSS conducts two types of screening for individuals seeking admission to a nursing facility—screening for evidence of mental retardation or mental illness, and screening for Medicaid eligibility. Private-pay residents enter a nursing facility based on a physician's documentation of need.

The DPH licenses two categories of nursing facilities in Connecticut -- (1) chronic and convalescent nursing homes (CCNH) for skilled or rehabilitative care, and (2) rest homes with nursing supervision (RHNS) for custodial care.

Connecticut's nursing facility residents are predominantly female (74%) and their average length of stay in a nursing facility is 824 days (2.2 years).

### Nursing Facility Projection Methodology

In order to project the number of beds required by Connecticut's nursing facilities (CCNH and RHNS) in the future, the following methodology was used:

- 1) Develop an inventory of 1995 CCNH and RHNS licensed beds within each USR.
- 2) Determine 1995 utilization rates by facility level of care, gender, and age group, where utilization is defined as patient days per 1,000 population.
- 3) Project bed requirements for the years 2000 and 2005 within each USR by first determining the average daily census of Connecticut residents and then adjusting for out-of-state residents and environmental trends that are expected to affect utilization. In addition, a target occupancy of 97.5% is assumed, as cited in Public Act 95-160 amending Connecticut General Statutes, Section 17b-355.

The data sources used to perform the analyses consisted of DPH's Long Term Care data base and OPM's population projections.

### Nursing Facility Bed Inventory (1995)

In 1995, Connecticut had a total of 32,054 licensed nursing facility beds (Table 4-12), of which the majority (88%) were CCNH beds. The North Central USR had the largest number of beds (32%) and the Eastern USR had the fewest number of beds (10%). Map 4-3 displays the distribution of nursing facility beds in the state.

Since 1991, efforts have been made to reduce the number of residents in Connecticut's nursing facilities by placing a moratorium on additional beds. Nevertheless, from 1991 to 1994, the total number of licensed beds actually increased from 29,391 to 32,149. This was due to the addition of beds that had been approved before the moratorium went into effect. From 1994 to 1995, however, the total number of licensed beds decreased slightly from 32,149 to 32,054.

While the total number of licensed beds was increasing, the mix of CCNH and RHNS beds was also changing. In 1991, the proportion of RHNS beds was 21% of total licensed beds, but by 1995 the proportion had decreased to 12%. This general pattern occurred uniformly among USRs.

**Table 4 - 12**  
**Nursing Facility Bed Inventory**  
**Connecticut, 1995**

USR	Licensed CCNH Beds	Licensed RHNS Beds	Total Beds Licensed
Southwest	4,590	615	5,205
South Central	6,900	1,366	8,266
Eastern	3,083	241	3,324
North Central	9,255	913	10,168
Northwest	4,523	568	5,091
Total State	28,351	3,703	32,054

### Nursing Facility Utilization (1995)

Table 4-13 provides a summary of 1995 nursing facility utilization rates for Connecticut residents. Utilization rates are defined as patient days per 1,000 population. The data are provided by facility level of care (CCNH and RHNS), gender, and age group.

There were a total of 10,262,397 patient days in 1995. This translates to an overall utilization rate of 3,120 days per 1,000 population. As expected, utilization of nursing facilities increases markedly with age. For example, while women under the age of 65 generated 245 patient days per 1,000 population, women aged 85 years and older used 104,865 days per 1,000 population. This suggests that 28.7% of women aged 85 years and older were in nursing facilities.

The same pattern holds true for men. Men under the age of 65 used 244 patient days per 1,000 population, whereas men aged 85 years and older used 68,056 days per 1,000, suggesting that 18.6% of men aged 85 years and older were in nursing facilities. Women are greater users of nursing facilities than men in all age categories. This is most likely due to the fact that women tend to live longer than men and are less likely to have a spouse as a support system.

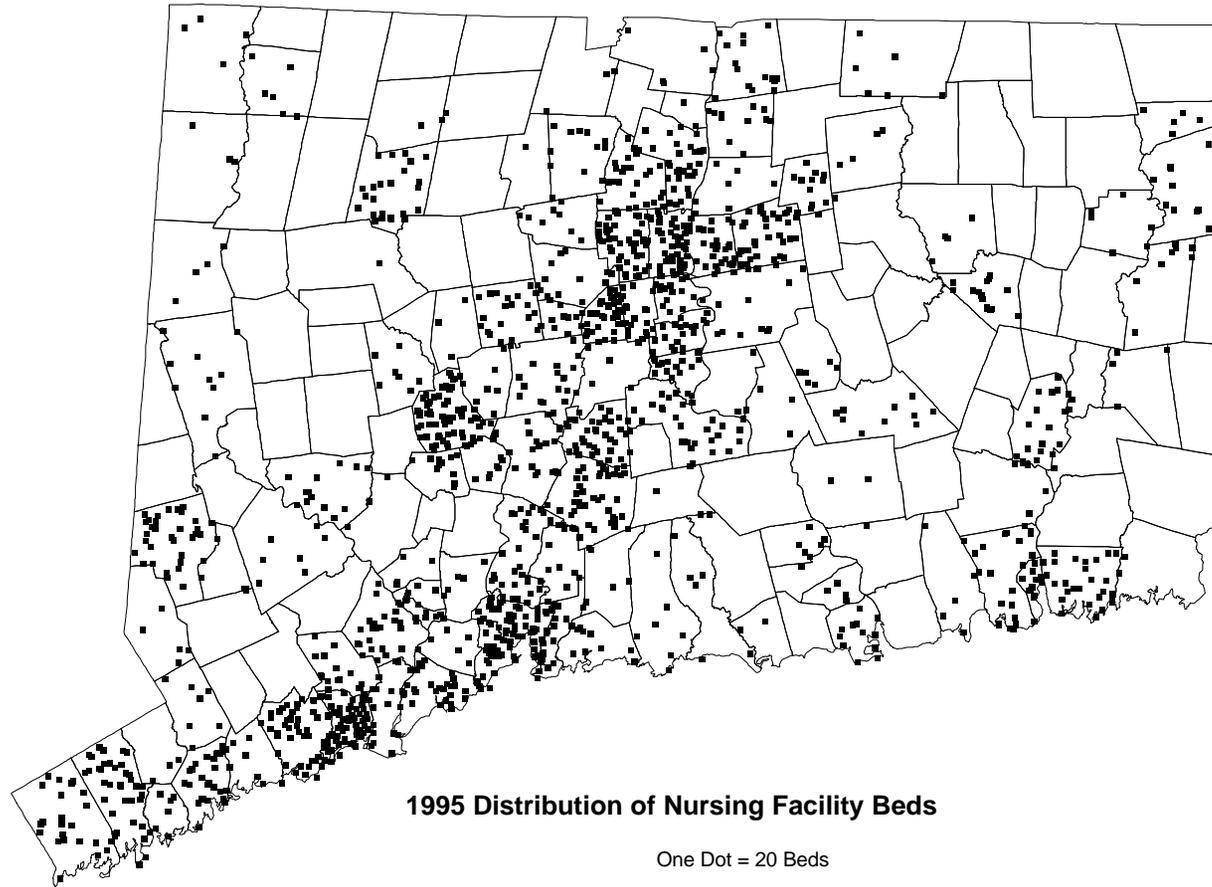
**Table 4 - 13**  
**Nursing Facility Utilization Rates**  
**Connecticut, 1995**

Gender/Age Cohort	Patient Days	Population	Utilization Rate
<b>Chronic and Convalescent Nursing Homes</b>			
Total State	9,031,693	3,288,997	2,746.0
Female	6,668,662	1,693,136	3,938.6
<65	294,369	1,409,690	208.8
65-74	597,512	141,807	4,213.6
75-84	2,020,808	101,211	19,966.3
85+	3,755,973	40,428	92,905.2
Male	2,363,031	1,595,861	1,480.7
<65	297,471	1,411,922	210.7
65-74	402,153	111,418	3,609.4
75-84	865,937	59,403	14,577.3
85+	797,470	13,118	60,792.0
<b>Rest Homes with Nursing Supervision</b>			
Total State	1,230,704	3,288,997	374.2
Female	930,323	1,693,136	549.5
<65	51,331	1,409,690	36.4
65-74	122,003	141,807	860.3
75-84	273,500	101,211	2,702.3
85+	483,489	40,428	11,959.3
Male	300,381	1,595,861	188.2
<65	47,156	1,411,922	33.4
65-74	58,084	111,418	521.3
75-84	99,852	59,403	1,680.9
85+	95,289	13,118	7,264.0
<b>CCNH &amp; RHNS</b>			
Total State	10,262,397	3,288,997	3,120.2
Female	7,598,985	1,693,136	4,488.1
<65	345,700	1,409,690	245.2
65-74	719,515	141,807	5,073.9
75-84	2,294,308	101,211	22,668.6
85+	4,239,462	40,428	104,864.5
Male	2,663,412	1,595,861	1,668.9
<65	344,627	1,411,922	244.1
65-74	460,237	111,418	4,130.7
75-84	965,789	59,403	16,258.3
85+	892,759	13,118	68,056.0

#### Projected Beds (2000 and 2005)

Tables 4-14 and 4-15 show the projected requirements for CCNH and RHNS beds by USR in the years 2000 and 2005, respectively. The projection indicates that by the year 2000, a total of 31,642 nursing facility beds will be required in the state, i.e., 412 fewer beds than are available in 1995, if treatment patterns remain the same. However, there will be a deficit of 174 RHNS beds. There will be an RHNS bed deficit in all regions except the South Central USR. There will also be a deficit of CCNH beds in the Southwest, Eastern, and Northwest USRs. By 2005, there is projected to be a deficit of 36 beds statewide, with an RHNS bed deficit of 229 beds.

Map 4-3



Note: The dots are randomly distributed within or at the town boundary and do not represent a long term care facility.

Source: DPH, OPPE, July 1997

Note that even if the target occupancy rate had been 100% rather than 97.5%, the same patterns would hold true. Although efforts have been made to reduce the number of residents in nursing facilities by limiting additional beds, by offering home and community-based services, and by developing supportive housing arrangements, there are no data available to quantify the impact of these approaches.

**Table 4 - 14**  
**Nursing Facility Projected Beds**  
**Connecticut, 2000**

Area/Item	CCNH	RHNS	Total
<b>Total State</b>			
Licensed Beds (1995)	28,351	3,703	32,054
Projected Average Census (CT Residents)	24,938	3,398	28,336
Out-of-state/Unknown Adjustment	8.6%	11.3%	8.9%
Total Projected Average Census	27,088	3,783	30,870
Target Occupancy Adjustment	0.975	0.975	0.975
Beds Required (2000)	27,765	3,877	31,642
Projected Surplus/Deficit (Licensed)	586	-174	412
<b>Southwest USR</b>			
Licensed Beds (1995)	4,590	615	5,205
Projected Average Census (CT Residents)	4,729	644	5,373
Out-of-state/Unknown Adjustment	13.7%	28.7%	15.5%
Total Projected Average Census	5,379	829	6,208
Target Occupancy Adjustment	0.975	0.975	0.975
Beds Required (2000)	5,511	850	6,361
Projected Surplus/Deficit (Licensed)	-921	-235	-1,156
<b>South Central USR</b>			
Licensed Beds (1995)	6,900	1,366	8,266
Projected Average Census (CT Residents)	5,809	792	6,600
Out-of-state/Unknown Adjustment	6.0%	4.4%	5.7%
Total Projected Average Census	6,158	826	6,978
Target Occupancy Adjustment	0.975	0.975	0.975
Beds Required (2000)	6,312	847	7,153
Projected Surplus/Deficit (Licensed)	588	519	1,113
<b>Eastern USR</b>			
Licensed Beds (1995)	3,083	241	3,324
Projected Average Census (CT Residents)	2,970	405	3,375
Out-of-state/Unknown Adjustment	7.2%	7.1%	7.2%
Total Projected Average Census	3,185	434	3,619
Target Occupancy Adjustment	0.975	0.975	0.975
Beds Required (2000)	3,265	444	3,710
Projected Surplus/Deficit (Licensed)	-182	-203	-386
<b>North Central USR</b>			
Licensed Beds (1995)	9,255	913	10,168
Projected Average Census (CT Residents)	7,097	967	8,064
Out-of-state/Unknown Adjustment	4.9%	12.4%	5.6%
Total Projected Average Census	7,444	1,087	8,511
Target Occupancy Adjustment	0.975	0.975	0.975
Beds Required (2000)	7,630	1,114	8,724
Projected Surplus/Deficit (Licensed)	1,625	-201	1,444
<b>Northwest USR</b>			
Licensed Beds (1995)	4,523	568	5,091
Projected Average Census (CT Residents)	4,333	591	4,924
Out-of-state/Unknown Adjustment	17.1%	11.1%	16.3%
Total Projected Average Census	5,074	656	5,727
Target Occupancy Adjustment	0.975	0.975	0.975
Beds Required (2000)	5,201	673	5,870
Projected Surplus/Deficit (Licensed)	-678	-105	-779

**Table 4 - 15**  
**Nursing Facility Projected Beds**  
**Connecticut, 2005**

Area/Item	CCNH	RHNS	Total
<b>Total State</b>			
Licensed Beds (1995)	28,351	3,703	32,054
Projected Average Census (CT Residents)	25,291	3,446	28,737
Out-of-state/Unknown Adjustment	8.6%	11.3%	8.9%
Total Projected Average Census	27,471	3,836	31,307
Target Occupancy Adjustment	0.975	0.975	0.975
Beds Required (2005)	28,158	3,932	32,090
Projected Surplus/Deficit (Licensed)	193	-229	-36
<b>Southwest USR</b>			
Licensed Beds (1995)	4,590	615	5,205
Projected Average Census (CT Residents)	4,777	651	5,428
Out-of-state/Unknown Adjustment	13.7%	28.7%	15.5%
Total Projected Average Census	5,434	838	6,272
Target Occupancy Adjustment	0.975	0.975	0.975
Beds Required (2005)	5,570	859	6,428
Projected Surplus/Deficit (Licensed)	-980	-244	-1,223
<b>South Central USR</b>			
Licensed Beds (1995)	6,900	1,366	8,266
Projected Average Census (CT Residents)	5,888	802	6,690
Out-of-state/Unknown Adjustment	6.0%	4.4%	5.7%
Total Projected Average Census	6,242	837	7,073
Target Occupancy Adjustment	0.975	0.975	0.975
Beds Required (2005)	6,398	858	7,250
Projected Surplus/Deficit (Licensed)	502	508	1,016
<b>Eastern USR</b>			
Licensed Beds (1995)	3,083	241	3,324
Projected Average Census (CT Residents)	3,045	415	3,460
Out-of-state/Unknown Adjustment	7.2%	7.1%	7.2%
Total Projected Average Census	3,266	444	3,710
Target Occupancy Adjustment	0.975	0.975	0.975
Beds Required (2005)	3,347	456	3,803
Projected Surplus/Deficit (Licensed)	-264	-215	-479
<b>North Central USR</b>			
Licensed Beds (1995)	9,255	913	10,168
Projected Average Census (CT Residents)	7,169	977	8,146
Out-of-state/Unknown Adjustment	4.9%	12.4%	5.6%
Total Projected Average Census	7,519	1,098	8,598
Target Occupancy Adjustment	0.975	0.975	0.975
Beds Required (2005)	7,707	1,126	8,813
Projected Surplus/Deficit (Licensed)	1,548	-213	1,355
<b>Northwest USR</b>			
Licensed Beds (1995)	4,523	568	5,091
Projected Average Census (CT Residents)	4,412	601	5,014
Out-of-state/Unknown Adjustment	17.1%	11.1%	16.3%
Total Projected Average Census	5,166	668	5,831
Target Occupancy Adjustment	0.975	0.975	0.975
Beds Required (2005)	5,295	685	5,977
Projected Surplus/Deficit (Licensed)	-772	-117	-886

## HOME HEALTH CARE SERVICES

During State Fiscal Year 1995 (July 1, 1994 - June 30, 1995), 119 licensed agencies provided home health care services in Connecticut. All the agencies offered nursing, physical therapy, speech therapy and homemaker/home health aide services, while 116 agencies (98%) also offered occupational therapy and medical social services. Sixty-four percent of the state's licensed agencies operated as non-profit facilities and

86% classified themselves as “free standing” facilities. A total of 6,249,425 client visits were provided during FY 1995, almost 24% more than in FY 1994.<sup>14</sup>

Agencies that only provide homemaker/companion services are not licensed in Connecticut, and subsequently, are not required to file annual service data. Currently, the agency annual filings are the best available data source of Connecticut home health care utilization and full-time equivalent (FTE) information, and are used as the primary source of data for this section.

## HOME HEALTH CARE PROJECTION METHODOLOGY

The service capacity of Connecticut’s licensed home health care agencies cannot be measured solely on the basis of the number of operating agencies. Instead, the total number of FTE direct care staff, as reported in the agencies’ annual filings was used as the basis for determining home health care service capacity. To project the FTE requirements for FY’s 2000 and 2005, FY 1995 utilization rates were calculated by age and gender cohorts, and then applied to the projected cohort populations in FY’s 2000 and 2005. Projections were calculated for the state and for each of Connecticut’s five USRs.

## FTE INVENTORY FY 1995

Table 4-16 presents the agency-reported, full-time equivalent, direct care staff for FY 1995, by service type (registered nurses, licensed practical nurses, registered physical therapists, registered occupational therapists, speech pathologists, social workers and homemaker/home health aides) and USR designation. Direct care staff is defined as persons hired directly by an agency and persons employed through individual or agency contractual arrangements.

During FY 1995, nearly 8,039 FTEs provided home care services through Connecticut’s licensed agencies. This is twice the number of FTEs (3,955) reported for FY 1991.<sup>15</sup> Seventy percent of the staff (5,625 FTEs) were homemaker/home health aides. The second largest FTE category was registered nurses (1,835 FTEs). Together, these two categories represent 93% of FY 1995’s home care agencies’ FTE complement, approximating the annual reporting percentages for FY 1991.

Table 4-17 also provides a calculation of the FTEs per 1,000 clients, by staff type and USR. An average of almost 84 FTEs per 1,000 clients provided services for the state during FY 1995. In comparison, an average of 61 FTEs per 1,000 clients existed statewide in FY 1991. Regionally, the number of FTEs ranged from a high of 108 FTEs per 1,000 clients in the Southwest USR to a low of 68 FTEs per 1,000 clients in the North Central USR.

Statewide, there was an average of 59 homemaker/home health aide FTEs and 19 registered nurse FTEs per 1,000 clients. Assuming 2,000 available hours per FTE per year, the average client received almost 168 hours in direct care home health care services, compared with 120 hours of direct care services per client reported in FY 1991.<sup>16</sup>

Although some agencies may have used a different definition of “FTE” when completing their service reports, it remains clear that the number of FTEs and overall service capacity of licensed home health care providers has grown rapidly in Connecticut between FYs 1991 and 1995.

## CLIENT CHARACTERISTICS

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<sup>14</sup> Connecticut Department of Public Health. Service Data Report , Licensed Home Health Care Agencies, 1995 (unpublished).

<sup>15</sup> Arthur D. Little, Inc., Assessment of current health care facilities and future requirements, Cambridge, Ma: (11 June 93).

<sup>16</sup> Arthur D. Little, Inc., Assessment of current health care facilities and future requirements, Cambridge, Ma: (11 June 93).

There were 95,898 non-duplicated clients served during FY 1995 (Table 4-18). This is 2.3 times more clients than were served during FY 1991. Sixty-four percent (61,330) of the clients were female, and 68% were aged 65 and over. The largest number of clients were served by agencies located in the North Central USR.

## UTILIZATION RATES

Tables 4-19, 4-20, and 4-21 present home health care utilization rates for FY 1995 and projections for 2000 and 2005.<sup>17</sup> A 9,079 (9.5%) client increase is projected for Connecticut by the year 2005.<sup>18</sup>

During FY 1995, approximately 3% of the state's population utilized home health care services (2.2% of males and 3.6% of females). Approximately one percent of the population under age 65 utilized home health care services, whereas 32% of the population over age 84 utilized services. Female utilization rates exceeded male rates until age 85. After that, males used home health care services at a higher rate than females.

Utilization rates by USR varied considerably from a low of 13.5 per 1,000 population in the Northwest USR to a high of 37.5 per 1,000 in the North Central USR. These rates, however, may merely be a function of the number of agencies in each USR.

### Unadjusted Home Health Care Staff Projections

The projected number of direct care home health FTEs that will be required in FYs 2000 and 2005, are given in Tables 4-20 and 4-21, respectively. The projections assume that utilization rates will remain unchanged and that only the population will change. Applying the FY 1995 FTE rate per 1,000 clients to the projected number of clients indicates that 8,459 FTEs will be needed by FY 2000, increasing to 8,800 FTEs by FY 2005.

Tables 4-22 and 4-23 show the projected FTE shortfalls in all service categories, statewide and by USR, for FYs 2000 and 2005. To meet the projected requirements for 2000, an increase of 420 (5.2%) FTEs will be needed. By 2005, an additional 341 FTEs will be needed, or a 9.5% increase over FY 1995. The distribution of projected home health care staff parallels the FY 1995 staff distribution, (e.g., 70% of the needed staff for FY 2000 should be homemaker/home health aides).

### Adjusted Staff Projections

Tables 4-20 and 4-21 show the unadjusted number of FTEs that will be needed to provide home health care services by 2000 and 2005. The calculations assume FY 1995 utilization rates remain unchanged and reflect only the projected population changes in 2000 and 2005.

The home health care market has grown significantly during the 90's and shows no signs of slowing. At the same time, there are a number of federal and state issues under legislative consideration that could positively or negatively influence the expansion of home health care services in Connecticut. This market volatility and the uncertainty over reimbursement increases the difficulty of predicting demand in 2000 and 2005.

Reimbursement availability influences the total number of provider agencies in Connecticut, and ultimately the number of visits provided to clients. If public funding is reduced, expansion of service capacity will be affected. Although the total number of licensed home health care agencies in the State has remained relatively static in FYs 94 and 95, the total number of visits increased dramatically between those

<sup>17</sup> The rates by USR are not necessarily representative of the location of the clients being served because they are based upon location of the home health agencies. The clients may or may not live in the same USR as the agency from whom they receive their services.

<sup>18</sup> The projected number of clients are based upon the projected population by age and gender cohorts. The projected population reflects projected growth in the elderly population, who are the largest users of home health care services.

years, from 5,049,603 visits in FY 94 to 6,249,425 visits in FY 95. The total number of FTEs also increased relative to the number of visits provided.

In the short term, pressure to increase the service capacity of Connecticut's home health care system will likely come from the continued reduction of the state's rest home beds. These bed reductions will necessarily increase the demand for home health care and other long term care services.

Considerable care is provided to the elderly by informal caregivers, usually consisting of family and friends. The population projections make it clear that the older population cohorts are expanding. Unfortunately though, the pool of informal caregivers is simultaneously shrinking. According to a recent study on chronic care, the ratio of informal caregivers to older Americans was 11 to 1 in 1990. By 2030, the number of potential informal caregivers is expected to drop to 6 to 1.<sup>19</sup> This implies that additional formal health care services will be needed in the future.

Home health care utilization is also likely to be affected in the future as on-line computer links between physicians and their patients are developed and become available as well as in-home robotics, advances in pharmacology, and new telephonic monitoring devices. However, some of these advances may actually reduce the need for some home health care staff.

In consideration of the above, the home health care service capacity requirements for FYs 2000 and 2005 are expected to increase by 7% per year over the unadjusted projections. The results based upon these estimates are displayed in Tables 4-24 and 4-25. They indicate that 3,825 additional FTEs will be needed by 2000 and that an additional 9,272 FTEs over 1995 levels will be needed by 2005. This will more than double the FY 1995 staff levels.

## DISCUSSION

Medicare funds pay for the vast majority of home health care services. If sufficient public funding is available, increasing home health direct care staffing to meet future needs should not be an obstacle. Approximately two-thirds of the state's home health care services are provided by homemakers, health care aides, and registered nurses. Training requirements for the homemaker and health care aide job classifications can be completed in about six weeks and educational programs are readily available in Connecticut. Registered nurses account for over one-quarter of home health care's staffing, and degree nursing programs are also available in the state. Recent declines in hospital-based nursing jobs have increased the pool of nurses available for employment in the home health care industry.

People are living longer because of improved living conditions, modern health care services, and decreased mortality from infectious diseases. While national studies to determine whether home health care has the ability to reduce hospitalization have largely been inconclusive, it has been shown that home health care services can substitute or reduce a patient's need for nursing home care. It is possible that many "frail" elderly, including some who currently reside in nursing homes, could be cared for in the community, if appropriate resources were available.

The state needs to develop a continuum of care plan which encompasses all components of the publicly-funded long term care system. However, to make the best decisions regarding the appropriate distribution of limited funds, the state needs timely and accurate utilization statistics, reimbursement information and outcome data. Early in the twenty-first century, increasing costs for home health care resulting from the influx of "baby boomers" will make cost monitoring and data analysis essential, for both enabling our elderly to receive necessary health care services and for maintaining Connecticut's financial health.

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<sup>19</sup>. The Robert Wood Johnson Foundation. Chronic care in America: a 21st century challenge. Princeton (NJ): The Foundation, 1996.

**Table 4 - 16**  
**Home Health Care Inventory, FTEs**  
**Connecticut, 1995**

USR	Registered Nurses	Practical Nurses	Registered Physical Therapists	Registered Occupational Therapists	Speech Pathologists	Social Workers	Homemaker/Home Health Aides	Total FTEs
Southwest	401.6	30.1	63.5	12.8	9.5	34.7	1,404.0	1956.2
South Central	472.4	52.2	59.1	10.1	3.9	26.9	1,816.5	2441.0
Eastern	184.1	18.2	22.8	5.2	3.7	7.2	410.3	651.5
North Central	654.4	54.7	78.9	15.1	7.2	26.0	1,557.6	2393.9
Northwest	122.4	8.1	18.5	2.4	1.5	7.2	436.1	596.3
Total State	1,834.9	163.2	242.9	45.6	25.7	102.1	5,624.6	8,038.9
Percent of Total FTEs	22.8%	2.0%	3.0%	0.6%	0.3%	1.3%	70.0%	100.0%

**Table 4 - 17**  
**Home Health Care FTEs per 1,000 Clients**  
**Connecticut, 1995**

USR	Number of Clients	Registered Nurses	Licensed Practical Nurses	Registered Physical Therapists	Registered Occupational Therapists	Speech Pathologists	Social Workers	Homemaker/Home Health Aides	Total FTEs per 1,000 Clients
Southwest	18,109	22.2	1.7	3.5	0.7	0.5	1.9	77.5	108.0
South Central	25,445	18.6	2.1	2.3	0.4	0.2	1.1	71.4	95.9
Eastern	9,480	19.4	1.9	2.4	0.6	0.4	0.8	43.3	68.7
North Central	35,329	18.5	1.6	2.2	0.4	0.2	0.7	44.1	67.8
Northwest	7,535	16.3	1.1	2.5	0.3	0.2	1.0	57.9	79.1
Total State	95,898	19.1	1.7	2.5	0.5	0.3	1.1	58.7	83.8

**Table 4 - 18**  
**Home Health Care Clients<sup>a</sup>**  
**Connecticut, 1995**

USR	Male Age (Years)					Female Age (Years)					Total Clients
	< 65	65-74	75-84	85 +	Total	< 65	65-74	75-84	85 +	Total	
Southwest	1,945	1,346	1,924	1,079	6,294	3,003	2,172	3,777	2,863	11,815	18,109
South Central	3,227	2,192	2,676	1,341	9,436	4,503	3,240	5,041	3,225	16,009	25,445
Eastern	1,219	749	909	459	3,336	2,146	1,108	1,830	1,060	6,144	9,480
North Central	5,115	2,750	3,385	1,586	12,836	8,230	4,141	6,096	4,026	22,493	35,329
Northwest	683	651	869	463	2,666	1,005	1,019	1,662	1,183	4,869	7,535
Total State	12,189	7,688	9,763	4,928	34,568	18,887	11,680	18,406	12,357	61,330	95,898
Percent of Total	35.3%	22.2%	28.2%	14.3%	100.0%	30.8%	19.0%	30.0%	20.1%	100.0%	

<sup>a</sup>Counts are non-duplicated

**Table 4 - 19**  
**Client Utilization Rate and Projected Clients for the Year 2000 and 2005**  
**Connecticut, 1995**

Age/Sex Cohort	1995 Population	1995 Number of Clients	1995 Utilization per 1,000	Projected 2000 Population	Projected 2000 Number of Clients	Projected 2005 Population	Projected 2005 Number of Clients
State of Connecticut							
Total	3,288,904	95,898	29.2	3,313,417	100,905	3,359,284	104,977
Male	1,595,713	34,568	21.7	1,609,835	36,208	1,635,114	37,535
<65	1,412,153	12,189	8.6	1,424,037	12,292	1,448,850	12,506
65-74	111,436	7,688	69.0	105,812	7,300	101,616	7,011
75-84	59,058	9,763	165.3	63,966	10,574	65,650	10,853
85+	13,065	4,928	377.2	16,019	6,042	18,998	7,166
Female	1,693,191	61,330	36.2	1,703,582	64,697	1,724,170	67,442
<65	1,410,439	18,887	13.4	1,413,562	18,929	1,430,774	19,159
65-74	141,940	11,680	82.3	132,337	10,890	125,014	10,287
75-84	100,659	18,406	182.9	109,281	19,983	110,678	20,238
85+	40,153	12,357	307.7	48,403	14,896	57,703	17,758
Southwest USR							
Total	627,560	18,109	28.9	628,501	19,037	634,642	19,704

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Male	300,679	6,294	20.9	302,046	6,568	306,040	6,756
<65	264,237	1,945	7.4	265,830	1,957	270,763	1,993
65-74	22,484	1,346	59.9	20,999	1,257	19,366	1,159
75-84	11,436	1,924	168.2	12,160	2,046	12,342	2,076
85+	2,522	1,079	427.8	3,057	1,308	3,570	1,527
Female	326,881	11,815	36.1	326,455	12,469	328,602	12,947
<65	270,809	3,003	11.1	269,841	2,992	272,337	3,020
65-74	28,651	2,172	75.8	26,369	1,999	24,384	1,849
75-84	19,804	3,777	190.7	21,011	4,007	21,088	4,022
85+	7,617	2,863	375.9	9,234	3,471	10,794	4,057

**Table 4 - 19 (continued)**  
**Client Utilization Rate and Projected Clients for the Year 2000 and 2005**

Age/Sex Cohort	1995 Population	1995 Number of Clients	1995 Utilization per 1,000	Projected 2000 Population	Projected 2000 Number of Clients	Projected 2005 Population	Projected 2005 Number of Clients
<b>South Central USR</b>							
Total	767,828	25,445	33.1	771,869	26,743	782,050	27,864
Male	369,609	9,436	25.5	371,714	9,865	376,989	10,228
<65	325,477	3,227	9.9	327,275	3,245	332,567	3,297
65-74	26,548	2,192	82.6	24,846	2,051	23,718	1,958
75-84	14,408	2,676	185.7	15,663	2,909	15,937	2,960
85+	3,176	1,341	422.2	3,931	1,660	4,766	2,012
Female	398,219	16,009	40.2	400,155	16,878	405,061	17,636
<65	329,152	4,503	13.7	329,570	4,509	333,754	4,566
65-74	34,205	3,240	94.7	31,408	2,975	29,420	2,787
75-84	25,008	5,041	201.6	27,266	5,496	27,246	5,492
85+	9,854	3,225	327.3	11,911	3,898	14,640	4,791
<b>Eastern USR</b>							
Total	391,360	9,480	24.2	394,610	10,027	404,222	10,625
Male	195,916	3,336	17.0	197,426	3,527	202,280	3,741
<65	176,723	1,219	6.9	177,545	1,225	181,637	1,253
65-74	11,987	749	62.5	11,778	736	11,743	734
75-84	5,972	909	152.2	6,591	1,003	7,082	1,078
85+	1,233	459	372.3	1,512	563	1,818	677
Female	195,444	6,144	31.4	197,184	6,500	201,942	6,883
<65	166,532	2,146	12.9	167,062	2,153	170,715	2,200
65-74	14,870	1,108	74.5	14,261	1,063	13,812	1,029
75-84	10,082	1,830	181.5	11,149	2,024	11,692	2,122
85+	3,960	1,060	267.7	4,712	1,261	5,723	1,532
<b>North Central USR</b>							
Total	942,272	35,329	37.5	943,216	37,089	952,381	38,588
Male	454,956	12,836	28.2	455,199	13,403	459,610	13,867
<65	401,020	5,115	12.8	400,606	5,110	404,983	5,166
65-74	32,703	2,750	84.1	30,662	2,578	29,105	2,447
75-84	17,436	3,385	194.1	19,147	3,717	19,708	3,826
85+	3,798	1,586	417.6	4,784	1,998	5,814	2,428
Female	487,316	22,493	46.2	488,017	23,686	492,771	24,721
<65	404,695	8,230	20.3	402,525	8,186	405,711	8,251
65-74	41,789	4,141	99.1	38,926	3,857	36,557	3,623
75-84	28,972	6,096	210.4	32,274	6,791	33,291	7,005
85+	11,859	4,026	339.5	14,292	4,852	17,212	5,843
<b>Northwest USR</b>							
Total	559,884	7,535	13.5	575,221	7,975	585,989	8,228
Male	274,555	2,666	9.7	283,450	2,814	290,194	2,910
<65	244,696	683	2.8	252,781	706	258,900	723
65-74	17,715	651	36.7	17,527	644	17,684	650
75-84	9,806	869	88.6	10,406	922	10,581	938
85+	2,337	463	198.1	2,736	542	3,030	600
Female	285,329	4,869	17.1	291,771	5,161	295,795	5,318
<65	239,251	1,005	4.2	244,564	1,027	248,258	1,043
65-74	22,425	1,019	45.4	21,373	971	20,841	947
75-84	16,792	1,662	99.0	17,581	1,740	17,361	1,718
85+	6,862	1,183	172.4	8,254	1,423	9,335	1,609

**Table 4 - 20**  
**Home Health Care Projected FTEs**  
**Connecticut, 2000**

Area/ Item	Registered Nurses	Licensed Practical Nurses	Registered Physical Therapists	Registered Occupational Therapists	Speech Therapists	Social Workers	Homemaker/ Home Health Aides	Total Projected FTEs
<b>Total State</b>								
1995 FTEs per 1,000 Clients	19.134	1.702	2.533	0.475	0.268	1.064	58.652	
Projected Clients	100,905	100,905	100,905	100,905	100,905	100,905	100,905	
Projected FTEs	1930.7	171.7	255.6	47.9	27.0	107.4	5918.3	8,459
<b>Southwest USR</b>								
1995 FTEs per 1,000 Clients	22.176	1.662	3.506	0.704	0.526	1.915	77.532	
Projected Clients	19,037	19,037	19,037	19,037	19,037	19,037	19,037	
Projected FTEs	422.2	31.6	66.7	13.4	10.0	36.5	1476.0	2,056
<b>South Central USR</b>								
1995 FTEs per 1,000 Clients	18.565	2.050	2.324	0.395	0.152	1.056	71.390	
Projected Clients	26,743	26,743	26,743	26,743	26,743	26,743	26,743	
Projected FTEs	496.5	54.8	62.2	10.6	4.1	28.2	1909.2	2,566
<b>Eastern USR</b>								
1995 FTEs per 1,000 Clients	19.420	1.917	2.405	0.552	0.386	0.763	43.283	
Projected Clients	10,028	10,028	10,028	10,028	10,028	10,028	10,028	
Projected FTEs	194.7	19.2	24.1	5.5	3.9	7.6	434.0	689
<b>North Central USR</b>								
1995 FTEs per 1,000 Clients	18.524	1.548	2.234	0.428	0.203	0.737	44.088	
Projected Clients	37,089	37,089	37,089	37,089	37,089	37,089	37,089	
Projected FTEs	687.0	57.4	82.9	15.9	7.5	27.3	1635.2	2,513
<b>Northwest USR</b>								
1995 FTEs per 1,000 Clients	16.248	1.075	2.460	0.319	0.198	0.959	57.881	
Projected Clients	7,975	7,975	7,975	7,975	7,975	7,975	7,975	
Projected FTEs	129.6	8.6	19.6	2.5	1.6	7.6	461.6	631

**Table 4 - 21**  
**Home Health Care Projected FTEs**  
**Connecticut, 2005**

Area/ Item	Registered Nurses	Licensed Practical Nurses	Registered Physical Therapists	Registered Occupational Therapists	Speech Pathologists	Social Workers	Homemaker/ Home Health Aides	Total Projected FTEs
<b>Total State</b>								
1995 FTEs per 1,000 Clients	19.134	1.702	2.533	0.475	0.268	1.064	58.652	
Projected Clients	104,977	104,977	104,977	104,977	104,977	104,977	104,977	
Projected FTEs	2008.6	178.7	265.9	49.9	28.1	111.7	6157.1	8,800
<b>Southwest USR</b>								
1995 FTEs per 1,000 Clients	22.176	1.662	3.506	0.704	0.526	1.915	77.532	
Projected Clients	19,704	19,704	19,704	19,704	19,704	19,704	19,704	
Projected FTEs	436.9	32.7	69.1	13.9	10.4	37.7	1527.7	2,128
<b>South Central USR</b>								
1995 FTEs per 1,000 Clients	18.565	2.050	2.324	0.395	0.152	1.056	71.390	
Projected Clients	27,864	27,864	27,864	27,864	27,864	27,864	27,864	
Projected FTEs	517.3	57.1	64.8	11.0	4.2	29.4	1989.2	2,673
<b>Eastern USR</b>								
1995 FTEs per 1,000 Clients	19.420	1.917	2.405	0.552	0.386	0.763	43.283	
Projected Clients	10,625	10,625	10,625	10,625	10,625	10,625	10,625	
Projected FTEs	206.3	20.4	25.6	5.9	4.1	8.1	459.9	730
<b>North Central USR</b>								
1995 FTEs per 1,000 Clients	18.524	1.548	2.234	0.428	0.203	0.737	44.088	
Projected Clients	38,588	38,588	38,588	38,588	38,588	38,588	38,588	
Projected FTEs	714.8	59.7	86.2	16.5	7.8	28.4	1701.3	2,615
<b>Northwest USR</b>								
1995 FTEs per 1,000 Clients	16.248	1.075	2.460	0.319	0.198	0.959	57.881	
Projected Clients	8,228	8,228	8,228	8,228	8,228	8,228	8,228	
Projected FTEs	133.7	8.8	20.2	2.6	1.6	7.9	476.2	651

**Table 4 - 22**  
**FTE Surplus/Deficit**  
**Connecticut, 2000**

Area/Item	Registered Nurses	Licensed Practical Nurses	Registered Physical Therapists	Registered Occupational Therapists	Speech Pathologists	Social Workers	Homemaker/Home Health Aides	FTE Totals
Total State								
FTEs Available, 1995	1834.9	163.2	242.9	45.6	25.7	102.0	5624.6	8038.9
Projected FTEs Required	1930.7	171.7	255.6	47.9	27.0	107.4	5918.3	8458.6
Projected FTE Surplus/Deficit	-95.8	-8.5	-12.7	-2.3	-1.3	-5.4	-293.7	-419.7
Southwest USR								
FTEs Available, 1995	401.6	30.1	63.5	12.8	9.5	34.7	1404.0	1956.2
Projected FTEs Required	422.2	31.6	66.7	13.4	10.0	36.5	1476.0	2056.4
Projected FTE Surplus/Deficit	-20.6	-1.5	-3.2	-0.6	-0.5	-1.8	-72.0	-100.2
South Central USR								
FTEs Available, 1995	472.4	52.2	59.1	10.1	3.9	26.9	1816.5	2441.0
Projected FTEs Required	496.5	54.8	62.2	10.6	4.1	28.2	1909.2	2565.6
Projected FTE Surplus/Deficit	-24.1	-2.6	-3.1	-0.5	-0.2	-1.3	-92.7	-124.6
Eastern USR								
FTEs Available	184.1	18.2	22.8	5.2	3.7	7.2	410.3	651.5
Projected FTEs Required	194.7	19.2	24.1	5.5	3.9	7.6	434.0	689.0
Projected FTE Surplus/Deficit	-10.6	-1.0	-1.3	-0.3	-0.2	-0.4	-23.7	-37.5
North Central USR								
FTEs Available, 1995	654.4	54.7	78.9	15.1	7.2	26.0	1557.6	2393.9
Projected FTEs Required	687.0	57.4	82.9	15.9	7.5	27.3	1635.2	2513.2
Projected FTE Surplus/Deficit	-32.6	-2.7	-4.0	-0.8	-0.3	-1.3	-77.6	-119.3
Northwest USR								
FTEs Available, 1995	122.4	8.1	18.5	2.4	1.5	7.2	436.1	596.3
Projected FTEs Required	129.6	8.6	19.6	2.5	1.6	7.7	461.6	631.2
Projected FTE Surplus/Deficit	-7.2	-0.5	-1.1	-0.1	-0.1	-0.5	-25.5	-34.9

**Table 4 - 23**  
**FTE Surplus/Deficit**  
**Connecticut, 2005**

Area/Item	Registered Nurses	Licensed Practical Nurses	Registered Physical Therapists	Registered Occupational Therapists	Speech Pathologists	Social Workers	Homemaker/ Home Health Aides	FTE Totals
<b>Total State</b>								
FTEs Available, 1995	1834.9	163.2	242.9	45.6	25.7	102.0	5624.6	8038.9
Projected FTEs Required	2008.6	178.7	265.9	49.9	28.1	111.7	6157.1	8800.0
Projected FTE Surplus/Deficit	-173.7	-15.5	-23.0	-4.3	-2.4	-9.7	-532.5	-761.1
<b>Southwest USR</b>								
FTEs Available, 1995	401.6	30.1	63.5	12.8	9.5	34.7	1404.0	1956.2
Projected FTEs Required	436.9	32.7	69.1	13.9	10.4	37.7	1527.7	2128.4
Projected FTE Surplus/Deficit	-35.3	-2.6	-5.6	-1.1	-0.9	-3.0	-123.7	-172.2
<b>South Central USR</b>								
FTEs Available, 1995	472.4	52.2	59.1	10.1	3.9	26.9	1816.5	2441.0
Projected FTEs Required	517.3	57.1	64.8	11.0	4.2	29.4	1989.2	2673.0
Projected FTE Surplus/Deficit	-44.9	-4.9	-5.7	-0.9	-0.3	-2.5	-172.7	-232.0
<b>Eastern USR</b>								
FTEs Available, 1995	184.1	18.2	22.8	5.2	3.7	7.2	410.3	651.5
Projected FTEs Required	206.3	20.4	25.6	5.9	4.1	8.1	459.9	730.3
Projected FTE Surplus/Deficit	-22.2	-2.2	-2.8	-0.7	-0.4	-0.9	-49.6	-78.8
<b>North Central USR</b>								
FTEs Available, 1995	654.4	54.7	78.9	15.1	7.2	26.0	1557.6	2393.9
Projected FTEs Required	714.8	59.7	86.2	16.5	7.8	28.4	1701.3	2614.7
Projected FTE Surplus/Deficit	-60.4	-5.0	-7.3	-1.4	-0.6	-2.4	-143.7	-220.8
<b>Northwest USR</b>								
FTEs Available, 1995	122.4	8.1	18.5	2.4	1.5	7.2	436.1	596.3
Projected FTEs Required	133.7	8.8	20.2	2.6	1.6	7.9	476.2	651.0
Projected FTE Surplus/Deficit	-11.3	-0.7	-1.7	-0.2	-0.1	-0.7	-40.1	-54.7

**Table 4 - 24**  
**Adjusted FTE Projections**  
**Connecticut, 2000**

Area/ Item	Registered Nurses	Licensed Practical Nurses	Registered Physical Therapists	Registered Occupational Therapists	Speech Pathologists	Social Workers	Homemaker/ Home Health Aides	Total FTEs
Total State								
FTEs Available, 1995	1,834.9	163.2	242.9	45.6	3.6	102.0	5,624.6	8,038.9
Projected FTEs (Base Case)	1,930.7	171.7	255.6	47.9	27.0	107.4	5,918.3	8,458.6
Projected FTEs Surplus/Deficit	-95.8	-8.5	-12.7	-2.3	-23.4	-5.4	-293.7	-419.7
Predicted Trends Adj. (7%/yr.)	1.4026	1.4026	1.4026	1.4026	1.4026	1.4026	1.4026	1.4026
Adjusted Projections	2,707.9	240.8	358.5	67.2	37.9	150.6	8,300.7	11,863.6
Projected FTE Surplus/Deficit	-873.0	-77.6	-115.6	-21.6	-34.3	-48.6	-2,676.1	-3,824.7
Southwest USR								
FTEs Available, 1995	401.6	30.1	63.5	12.8	9.5	34.7	1,404.0	1,956.2
Projected FTEs (Base Case)	422.2	31.6	66.7	13.4	10.0	36.5	1,476.0	2,056.4
Projected FTEs Surplus/Deficit	-20.6	-1.5	-3.2	-0.6	-0.5	-1.8	-72.0	-100.2
Predicted Trends Adj. (7%/yr.)	1.4026	1.4026	1.4026	1.4026	1.4026	1.4026	1.4026	1.4026
Adjusted Projections	592.2	44.3	93.6	18.8	14.0	51.2	2,070.2	2,884.2
Projected FTE Surplus/Deficit	-190.6	-14.2	-30.1	-6.0	-4.5	-16.5	-666.1	-928.1
South Central USR								
FTEs Available, 1995	472.4	52.2	59.1	10.1	3.9	26.9	1,816.5	2,441.0
Projected FTEs (Base Case)	496.5	54.8	62.2	10.6	4.1	28.2	1,909.2	2,565.6
Projected FTEs Surplus/Deficit	-24.1	-2.6	-3.1	-0.5	-0.2	-1.3	-92.7	-124.6
Predicted Trends Adj. (7%/yr.)	1.4026	1.4026	1.4026	1.4026	1.4026	1.4026	1.4026	1.4026
Adjusted Projections	696.4	76.9	87.2	14.9	5.8	39.6	2,677.8	3,598.4
Projected FTE Surplus/Deficit	-224.0	-24.7	-28.1	-4.8	-1.9	-12.7	-861.2	-1,157.4
Eastern USR								
FTEs Available, 1995	184.1	18.2	22.8	5.2	3.7	7.2	410.3	651.5
Projected FTEs (Base Case) 2000	194.7	19.2	24.1	5.5	3.9	7.6	434.0	689.2
Projected FTEs Surplus/Deficit	-10.6	-1.0	-1.3	-0.3	-0.2	-0.4	-23.7	-37.7
Predicted Trends Adj. (7%/yr.)	1.4026	1.4026	1.4026	1.4026	1.4026	1.4026	1.4026	1.4026
Adjusted Projections	273.1	26.9	33.8	7.7	5.5	10.7	608.7	966.6
Projected FTE Surplus/Deficit	-89.0	-8.8	-11.0	-2.5	-1.8	-3.4	-198.4	-315.1
North Central USR								
FTEs Available, 1995	654.4	54.7	78.9	15.1	7.2	26.0	1,557.6	2,393.9
Projected FTEs (Base Case)	687.0	57.4	82.9	15.9	7.5	27.3	1,635.2	2,513.2
Projected FTEs Surplus/Deficit	-32.6	-2.7	-4.0	-0.8	-0.3	-1.3	-77.6	-119.3
Predicted Trends Adj. (7%/yr.)	1.4026	1.4026	1.4026	1.4026	1.4026	1.4026	1.4026	1.4026
Adjusted Projections	963.6	80.5	116.3	22.3	10.5	38.3	2,293.5	3,524.9
Projected FTE Surplus/Deficit	-309.1	-25.8	-37.4	-7.2	-3.4	-12.3	-735.9	-1,131.0
Northwest USR								
FTEs Available, 1995	122.4	8.1	18.5	2.4	1.5	7.2	436.1	596.3
Projected FTEs (Base Case)	129.6	8.6	19.6	2.5	1.6	7.6	461.6	631.2
Projected FTEs Surplus/Deficit	-7.2	-0.5	-1.1	-0.1	-0.1	-0.4	-25.5	-34.9
Predicted Trends Adj. (7%/yr.)	1.4026	1.4026	1.4026	1.4026	1.4026	1.4026	1.4026	1.4026
Adjusted Projections	181.8	12.1	27.5	3.5	2.2	10.7	647.4	885.3
Projected FTE Surplus/Deficit	-59.3	-4.0	-9.0	-1.1	-0.8	-3.4	-211.3	-289.0

**Table 4 - 25**  
**Adjusted FTE Projections**  
**Connecticut, 2005**

Area / Item	Registered Nurses	Licensed Practical Nurses	Registered Physical Therapists	Registered Occupational Therapists	Speech Pathologists	Social Workers	Homemaker/ Home Health Aides	Total FTEs
<b>Total State</b>								
FTEs Available 1995	1,834.9	163.2	242.9	45.6	3.6	102.0	5,624.6	8,038.9
Projected FTEs (Base Case)	2,008.6	178.7	265.9	49.9	28.1	111.7	6,157.1	8,800.0
Projected FTEs Surplus/Deficit	-173.7	-15.5	-23.0	-4.3	-24.5	-9.7	-532.5	-761.1
Predicted Trends Adj. (7%/yr.)	1.9672	1.9672	1.9672	1.9672	1.9672	1.9672	1.9672	1.9672
Adjusted Projections	3,951.2	351.5	523.1	98.2	55.3	219.7	12,111.9	17,310.9
Projected FTE Surplus/Deficit	-2,116.3	-188.3	-280.2	-52.6	-51.7	-117.7	-6,487.3	-9,272.0
<b>Southwest USR</b>								
FTEs Available 1995	401.6	30.1	63.5	12.8	9.5	34.7	1,404.0	1,956.2
Projected FTEs (Base Case)	436.9	32.7	69.1	13.9	10.4	37.7	1,527.7	2,128.4
Projected FTEs Surplus/Deficit	-35.3	-2.6	-5.6	-1.1	-0.9	-3.0	-123.7	-172.2
Predicted Trends Adj. (7%/yr.)	1.9672	1.9672	1.9672	1.9672	1.9672	1.9672	1.9672	1.9672
Adjusted Projections	859.4	64.3	135.9	27.3	20.5	74.2	3,005.2	4,186.9
Projected FTE Surplus/Deficit	-457.9	-34.2	-72.4	-14.6	-10.9	-39.5	-1601.2	-2230.7
<b>South Central USR</b>								
FTEs Available 1995	472.4	52.2	59.1	10.1	3.9	26.9	1,816.5	2,441.0
Projected FTEs (Base Case)	517.3	57.1	64.8	11.0	4.2	29.4	1,989.2	2,673.0
Projected FTEs Surplus/Deficit	-44.9	-4.9	-5.7	-0.9	-0.3	-2.5	-172.7	-232.0
Predicted Trends Adj. (7%/yr.)	1.9672	1.9672	1.9672	1.9672	1.9672	1.9672	1.9672	1.9672
Adjusted Projections	1,017.6	112.3	127.5	21.6	8.3	57.8	3,913.1	5,258.2
Projected FTE Surplus/Deficit	-545.2	-60.2	-68.3	-11.6	-4.4	-31.0	-2,096.5	-2,817.2
<b>Eastern USR</b>								
FTEs Available 1995	184.1	18.2	22.8	5.2	3.7	7.2	410.3	651.5
Projected FTEs (Base Case)	206.3	20.4	25.6	5.9	4.1	8.1	459.9	730.3
Projected FTEs Surplus/Deficit	-22.2	-2.2	-2.8	-0.7	-0.4	-0.9	-49.6	-78.8
Predicted Trends Adj. (7%/yr.)	1.9672	1.9672	1.9672	1.9672	1.9672	1.9672	1.9672	1.9672
Adjusted Projections	405.8	40.1	50.4	11.6	8.1	15.9	904.7	1,436.6
Projected FTE Surplus/Deficit	-221.7	-22.0	-27.6	-6.4	-4.4	-8.7	-494.4	-785.1
<b>North Central USR</b>								
FTEs Available 1995	654.4	54.7	78.9	15.1	7.2	26.0	1,557.6	2,393.9
Projected FTEs (Base Case)	714.8	59.7	86.2	16.5	7.8	28.4	1,701.3	2,614.7
Projected FTEs Surplus/Deficit	-60.4	-5.0	-7.3	-1.4	-0.6	-2.4	-143.7	-220.8
Predicted Trends Adj. (7%/yr.)	1.9672	1.9672	1.9672	1.9672	1.9672	1.9672	1.9672	1.9672
Adjusted Projections	1,406.1	117.4	169.6	32.5	15.3	55.9	3,346.7	5,143.5
Projected FTE Surplus/Deficit	-751.7	-62.8	-90.6	-17.4	-8.2	-29.8	-1,789.1	-2,749.6
<b>Northwest USR</b>								
FTEs Available 1995	122.4	8.1	18.5	2.4	1.5	7.2	436.1	596.3
Projected FTEs (Base Case)	133.7	8.8	20.2	2.6	1.6	7.9	476.2	651.0
Projected FTEs Surplus/Deficit	-11.3	-0.7	-1.7	-0.2	-0.1	-0.7	-40.1	-54.7
Predicted Trends Adj. (7%/yr.)	1.9672	1.9672	1.9672	1.9672	1.9672	1.9672	1.9672	1.9672
Adjusted Projections	263.0	17.3	39.7	5.1	3.1	15.5	936.8	1,280.6
Projected FTE Surplus/Deficit	-140.6	-9.2	-21.2	-2.7	-1.7	-8.3	-500.6	-684.3

## EMERGENCY MEDICAL SERVICES

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### INTRODUCTION

Emergency medical services (EMS) are critical components of the overall health care delivery system. The availability of these services to the public at large is often the only difference between life and death in a medical emergency. EMS directly affect the public's health by providing immediate intervention for victims of traumatic events, heart attacks, strokes, and motor vehicle accidents.

An estimated one in four Americans is injured annually and accounts for one in three emergency department visits.<sup>20</sup> Unintentional injuries kill 1,000 Connecticut residents<sup>21</sup> and cause 36,000 hospital admissions in the state each year<sup>22</sup>. Motor-vehicle-related injuries account for nearly 4,000 hospitalizations in Connecticut each year<sup>23</sup> and represent 5% of emergency department visits<sup>24</sup>. Chapter 3 contains a more extensive discussion of injuries and their impact on Connecticut's health care system.

The essential purpose of an EMS system is to reduce death and disability due to injuries and other emergent medical events. For EMS to accomplish its purpose, the system must provide for the personnel, facilities, and equipment for the efficient, effective, and coordinated delivery of health care services to handle emergencies. Typically, EMS systems incorporate 15 components -- manpower, training, communications, transportation, facilities, critical care units, public safety agencies, consumer participation, access to care, transfer of patients, standardized patient record keeping, public information and education, evaluation, disaster linkages, and mutual aid agreements<sup>25</sup>.

### EMS RELATIONSHIP WITH *HEALTHY CONNECTICUT 2000*

Emergency medical services contribute towards the state's achievement of year 2000 goals. Objective 1.1 of *Healthy Connecticut 2000* is to reduce coronary heart disease deaths to no more than 84/100,000 people. The presence and expertise of EMS personnel who are trained in cardiopulmonary resuscitation and advanced cardiac care can provide direct intervention for reducing coronary heart disease deaths. Chapter 7 of *Healthy Connecticut 2000* identifies objectives for reducing violence that results in death and disability, and Chapter 9 of *Healthy Connecticut 2000* relates to unintentional injury objectives such as reducing deaths from motor vehicle crashes, falls, drownings, and residential fires. Emergency medical services are often the first medical care provided to victims of violence and injuries. Thus, the service is critical for reducing death and disability outcomes as identified in *Healthy Connecticut 2000*.

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<sup>20</sup> McCaig LF. *National Hospital Ambulatory Medical Care Survey: 1992*. Washington: National Center for Health Statistics, 1994.

<sup>21</sup> Connecticut Department of Public Health, Office of Policy, Planning, and Evaluation, Vital Records, 1994.

<sup>22</sup> Connecticut Office of Health Care Access. Hospital Discharge Data Base, 1995.

<sup>23</sup> Connecticut Department of Public Health, Office of Policy, Planning, and Evaluation, 1995.

<sup>24</sup> McCaig LF.

<sup>25</sup> U.S. Department of Health, Education and Welfare. Emergency Medical Services System Act of 1973.

## CONNECTICUT'S EMERGENCY MEDICAL SERVICE SYSTEM

The emergency medical services system in Connecticut is organized on three levels consisting of state, regional, and local levels. Chapter 368d of the Connecticut General Statutes identifies the responsibilities of the system to assure that each resident in the State has access to emergency medical services. Regulation of the system covers all emergency medical care providers, all personnel training requirements and authorized levels of services, all vehicle specifications and equipment standards, and the setting of rates for service delivery.<sup>26</sup> Regulations are promulgated by DPH which is also responsible for the planning, development and administration of the statewide EMS system. DPH establishes minimum standards, provides technical and consulting assistance, adopts and enforces regulations, coordinates education and training programs, prepares plans and programs, and certifies EMS personnel and equipment.

The regional level of EMS infrastructure acts as liaison between state and local efforts. Five defined EMS regions, identical to the Uniform Service Regions in Connecticut, are represented by EMS councils. These councils serve as authorized extensions of the State in performing delegated state functions and in implementing state policy and programs at the regional and local level. The councils develop regional implementation plans that complement the state plan<sup>27</sup>, provide technical assistance and serve as a voice for the local communities concerning all EMS issues.

The local EMS infrastructure is responsible for providing services or contracting for the needed emergency medical services in the community. The EMS delivery system includes prehospital care providers, hospital emergency departments, and specialized hospital facilities. In Connecticut, 276 commercial, municipal, or volunteer providers served the public's need for prehospital emergency medical services in 1997. Over 40% of these providers are volunteer fire departments and one-quarter are volunteer ambulance companies (Table 4-26).

**Table 4 - 26**  
**Prehospital Emergency Medical Service Providers**  
**Connecticut, 1997**

Type of Provider	Number	Percent
Volunteer Fire Departments	117	42.4%
Volunteer Ambulance Company	71	25.7%
Private	35	12.7%
Local Fire Department	21	7.6%
Police Department	16	5.8%
Hospital Based	9	3.3%
State Institution	6	2.2%
Municipal	1	0.3%
Total	276	100.0%

Source: DPH, OEMS, data compiled as of 6/30/97

The hospital emergency departments in Connecticut are dedicated to offering emergency medical evaluation and initial treatment to patients. When an injury requires advanced patient care as a result of a serious injury or illness, the victim may best be served in a facility that offers specialized emergency care 24 hours a day such as a trauma center, burn center, neonatal or pediatric center. There are nine Connecticut hospitals that are designated as trauma facilities and serve as participants in the EMS trauma delivery system (Table 4 - 27).

The EMS delivery system involves both the public and private sector working together to provide the necessary services to meet the emergency medical needs of our residents. The variety of stakeholders

<sup>26</sup> Regulations of Connecticut State Agencies, Emergency Medical Services, Sections 19a-177, 19a-179 through 19a-180.

<sup>27</sup> Connecticut Department of Public Health. *Emergency Medical Services Plan*. Hartford: Office of Emergency Medical Services, 1997.

range from a small local fire department to the large city hospital, but each is involved in this critical component of the overall health care delivery system in Connecticut.

**Table 4 - 27**  
**Designated Trauma Facilities**  
**Connecticut, 1997**

Trauma Level and Hospital	
Level I <sup>a</sup>	Bridgeport Hospital Hartford Hospital St. Francis Hospital and Medical Center Yale New Haven Hospital
Level II <sup>b</sup>	Hospital of Saint Raphael St. Mary's Hospital St. Vincent's Hospital Stamford Hospital Waterbury Hospital

Source: DPH, OEMS, data compiled as of 4/23/97

<sup>a</sup> Level I indicates comprehensive emergency services offering complete and advanced patient care for all emergencies including those requiring complex and specialized emergency care 24 hours a day.

<sup>b</sup> Level II offers advanced patient care in all medical and surgical specialties to render resuscitation and life-support 24 hours a day.

## CONNECTICUT EMS PLAN

In January of 1997, the DPH published the latest statewide EMS plan. The plan identifies the need for a uniform funding mechanism, the lack of a statewide prehospital data collection system, and the need to designate primary service area responders for all levels of service (i.e. first responder, basic ambulance, and paramedic). Public health professionals need adequate information to develop, implement, and evaluate prevention programs, and decision makers need timely information to develop policies to prevent injuries and unintentional deaths. Baseline and follow-up studies of trauma incidence and outcomes are instrumental in planning, implementing, and evaluating a trauma care system. Among the most useful data sources are trauma registries, hospital discharge data, vital statistics, EMS run reports, and surveys that assess hospital trauma care capabilities.

DPH, in collaboration with the Connecticut Hospital Association, developed a trauma registry that identifies traumatic injuries; however, there is no mechanism to evaluate the overall EMS system, its effectiveness of services, and the appropriateness of care provided to victims of medical and trauma related emergencies. DPH has revised an EMS "run form" to collect information about emergency medical services and is available to all providers free of charge. The form has not been widely used and there is no requirement for providers to submit the information to the State. Each EMS service, in cooperation with its sponsoring hospital, determines which "run form" it will use and what additional data beyond the minimum is to be included. Therefore, there are multiple forms that are not compatible between regions, municipalities, or hospital service areas.

There is an effort underway to develop a prehospital data base that can link to the trauma registry and the hospital discharge data base to assess and evaluate the continuity of care for medical emergency victims. DPH has drafted a scope of work and is in the process of developing a data management system to collect and analyze data when contributed. This is in response to the goals and objectives outlined in the EMS plan.

The objectives in the state EMS Plan are considered ambitious but necessary to be prepared for an increasing demand for emergency medical resources. The conditions that are present now will be present in the future and increase with a rapidly aging population. The increasing incidence of violent crime in the urban areas and the spread of diverse infectious diseases inspires the EMS system to respond appropriately. It is one of the few health care services that is relied upon so heavily by the entire population. Current and proposed efforts to improve the system may require budget assessments and reallocations and redefined priorities at the local, regional, state, and federal levels.

## SCHOOL-BASED HEALTH CENTERS

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An estimated 9.8 million children (14%) under the age of 18 were uninsured in the United States at any time during 1995.<sup>28</sup> An estimated 80,000 of these children were residents of Connecticut.<sup>29,30</sup> Children who are uninsured, underinsured, or living at or below poverty level are often faced with numerous obstacles to appropriate and timely primary health and mental health care. Adolescents aged 12 to 17 are especially vulnerable, as nearly 15% of this age group are uninsured. Cost is the primary barrier to health care access for children, but insufficient transportation, medical practices that limit access to Medicaid enrolled children, cultural barriers, an unfamiliarity regarding the availability of services or the importance of preventive health care can also conspire to hamper a child's chances of receiving necessary health care. A major barrier to health care for adolescents is the issue of confidentiality.

Barriers to health care exist even when a child has medical insurance, as many single- or two-working-parent families find it difficult to get their children to medical appointments during working hours. In some geographical areas, accessibility problems are further exacerbated by an overall shortage of health care professionals.

For more than twenty years, Connecticut schools have tried to bring health care services to their students in need. This has resulted in the establishment of school-based health clinics and centers (SBHC). In 1985, the first DPH funded SBHC opened at the Bassick High School in Bridgeport. Since then, over forty new clinics have opened in the state. During SFY 1995-96, DPH provided \$4.3 million in funding to 42 comprehensive SBHC sites with over \$3.6 million allocated by the state legislature (Figure 4-3).<sup>31</sup>

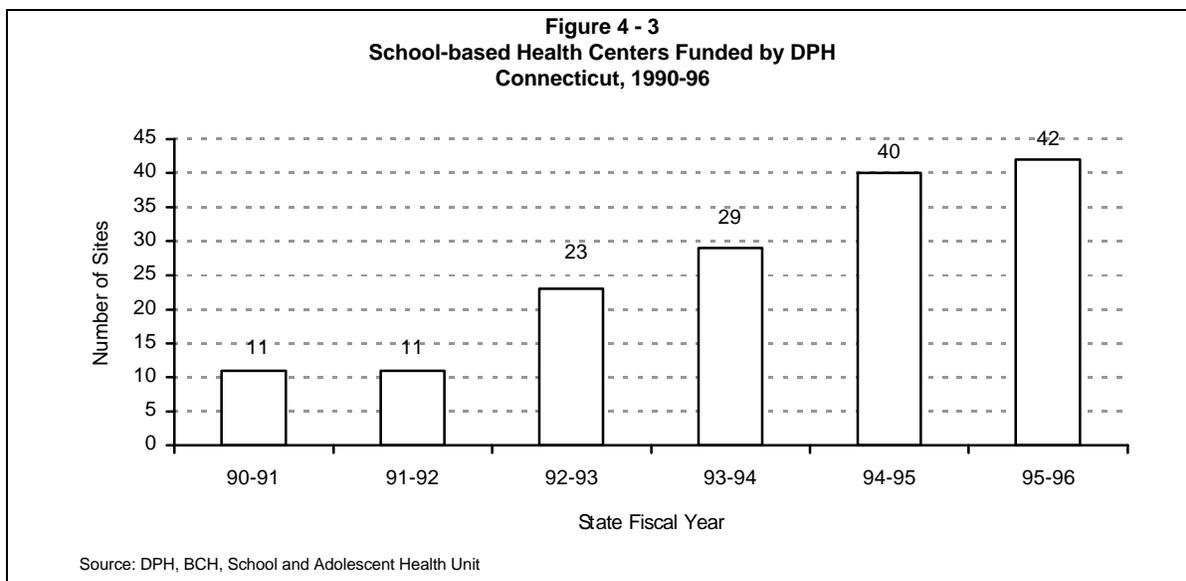
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<sup>28</sup> U.S. Bureau of the Census. *Current Population Study*, Washington, D.C., 1996.

<sup>29</sup> Tash, Jean, Census Bureau, Housing and Household Economic Statistics Division, Income Statistics Branch, Health Insurance Coverage Status by State, Number and Percent of Persons under 18 Years Old by Type of Coverage: 1987-1995, p2.

<sup>30</sup> The problem of uninsured children was previously discussed in Chapter 2.

<sup>31</sup> Making the Grade-Connecticut. School-based Health Clinics in Connecticut 1995-96, The George Washington University, Washington, D.C. 1997, <http://www.gwu.edu/~mtg/grant/ct/ctfs.html>.

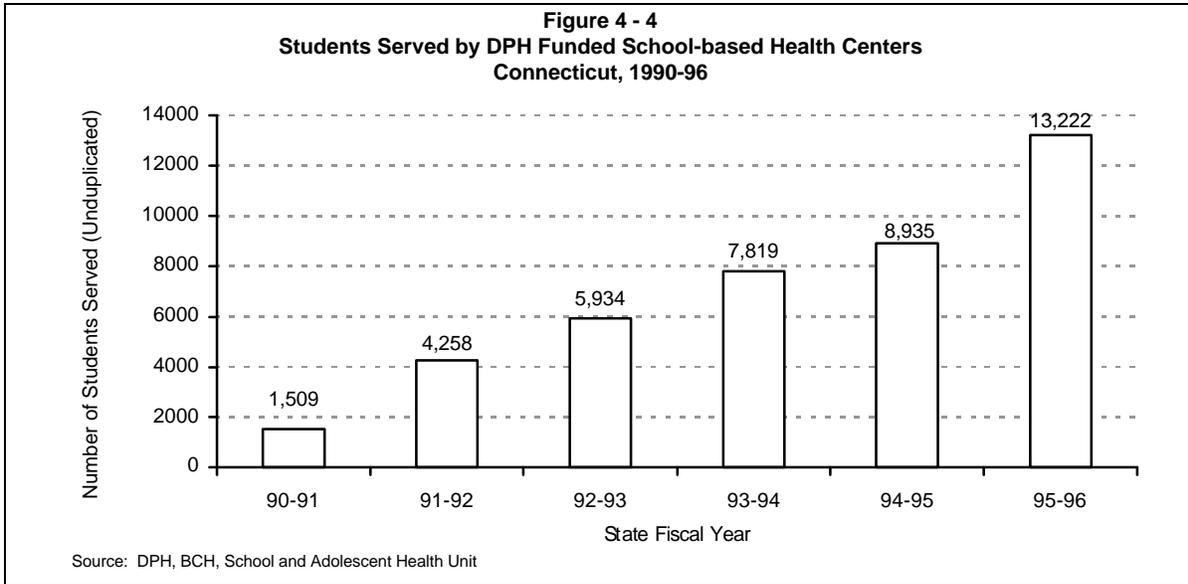


Services are provided by multidisciplinary teams of professionals with expertise in pediatric and adolescent health care including nurse practitioners, physician assistants, social workers, doctors, dentists and/or dental hygienists. Although services are targeted toward uninsured or underinsured students or those without a family doctor, any child enrolled at a site school may utilize the services with parental permission.

During SFY 1995-96, Connecticut ranked fourth in the nation in total number of SBHC sites. All of Connecticut's SBHCs are located within or on school grounds, and are licensed as outpatient clinics or hospital satellites by the DPH. Eleven sites were in elementary schools, 18 were located at high schools, and 12 at middle schools. Each site provided comprehensive primary health and mental health care services. In addition, five sites (three in Bridgeport and two in Stamford) offered dental services.

DPH-funded SBHCs annually submit utilization and demographic data to the DPH. Based on preliminary information<sup>32</sup>, 13,222 students received health services in Connecticut's SBHCs during SFY 1995-96, an increase of almost 50% over those served in SFY 1994-95 (Figure 4-4).

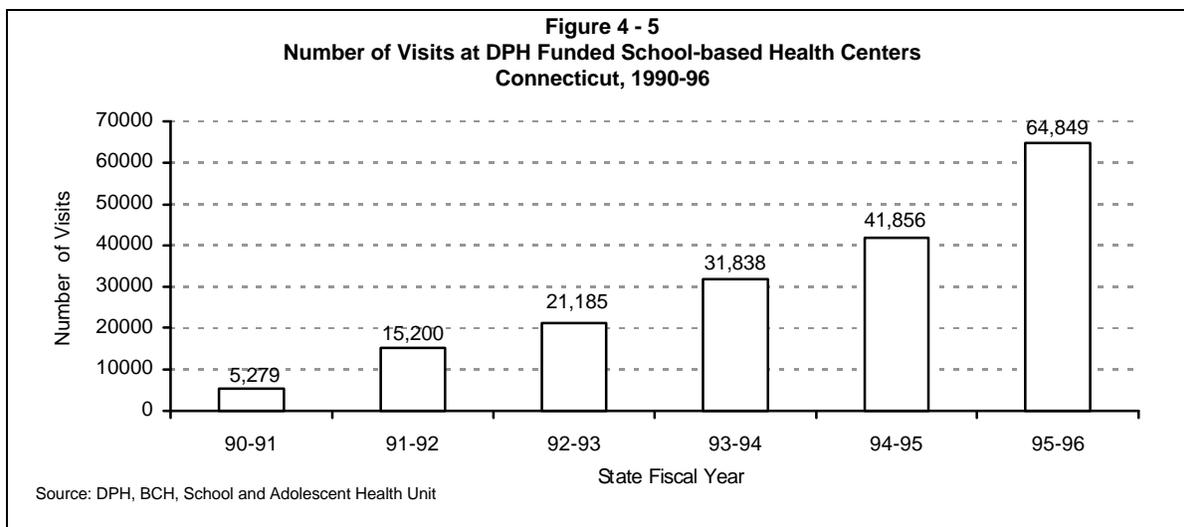
<sup>32</sup> Preliminary data for 7/1/95-6/30/96 - 39 SBHCs reporting, 4 reports incomplete. Final data will be higher.



Almost 60% of the students utilizing services during SFY 1995-96 were female. Nearly 40% were black, 30% were Hispanic, and 26% were white. Over 15,000 students participated in SBHC health promotion and illness prevention education activities provided through a variety of health fairs, classroom instruction, and after-school programs.

SBHC visits increased more than 12-fold between SFYs 1990-91 and 1995-96 (Figure 4-5). The average number of visits for students using the services increased from 3.5 visits per student in SFY 1990-91 to 4.9 visits in SFY 1995-96 and the number of visits per center actually increased 3-fold from 480 to 1544. The most frequent medical reasons for SBHC visits during SFY 1995-96 were physical exams, health education, reproductive health, dispensing medications and prescriptions, outreach/follow up, lab testing, screenings, dental care, HIV/AIDS counseling, education and immunizations. The behavioral/psychosocial reasons for SBHC visits were psychological support/advocacy, family problem/counseling, school problems, peer problems, stress management, depression, anxiety, loss/grief, violence and adjustment disorders.

When students were asked at the time of their first visit to the SBHC whether they had a regular source of medical care, nearly a third responded that they had a private physician (Table 4-28). It is important to note, however, that 19% of responding students reported “do not know,” while another 8% indicated that they had no regular source of care. A little over 4% of the students said that they utilized an emergency room or an urgent care clinic when they needed health care services. Thus nearly 32% of the SBHC users had no regular source of primary care.



**Table 4 - 28**  
**Student Reported Regular Source of Medical Care**  
**Connecticut, 1995-96**

Regular Source Of Medical Care <sup>a</sup>	% of Responses
Private Physician	32.4%
Did Not Know	18.8%
Hospital Clinic	15.2%
Community Health Center	11.3%
No Regular Source of Medical Care	8.3%
Hospital Emergency Room	3.1%
HMO	1.7%
Military Clinic	1.5%
Local Health Department	1.5%
Urgent Care Clinic	1.3%
Other	.06%

<sup>a</sup> Preliminary data for 7/1/95-6/30/96. 39 DPH- funded SBHCs reporting.

Source: DPH, BCH, School and Adolescent Health Unit, Annual SBHC Report, 1995-1996.

SBHCs have experienced continued growth in recent years, fueled by an increase in popularity and acceptance by students, parents, schools, communities and state governments, and increases in grant dollars and state appropriations. Map 4-4 illustrates the locations of the 64 licensed clinics providing school health services in Connecticut during SFY 1996-97. Appendix G presents a discussion of school-based health centers in the Safety Net Providers report.



## COMMUNITY HEALTH CENTERS

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Community health centers (CHCs) are public or private non-profit medical care facilities that offer comprehensive, community-based, primary health care services to low-income, uninsured or underinsured persons and are primarily located in medically underserved areas. Map 4-5 identifies the 30 Connecticut towns that were federally designated as having medically underserved areas, medically underserved populations, or both in 1997.

CHCs offer residents of all ages access to a wide range of services including medical, dental, and mental health care, as well as substance abuse, social and outreach services. There were 14 community health center corporations in Connecticut in state fiscal year 1996-97. The locations of the community health center corporations and clinic sites in Connecticut are shown on Map 4-6. Additional services are also provided at other sites such as senior centers, substance abuse or homeless health services centers, school-based centers, college infirmaries and perinatal and child guidance clinics.

Beyond providing “traditional” health care services, centers also serve as a central meeting place for the community and may provide recreational, hobby or handicraft programs, counseling, parenting, exercise classes, or literacy programs. Outreach efforts may include transportation to health care services or a mobile van to reach home-bound persons.

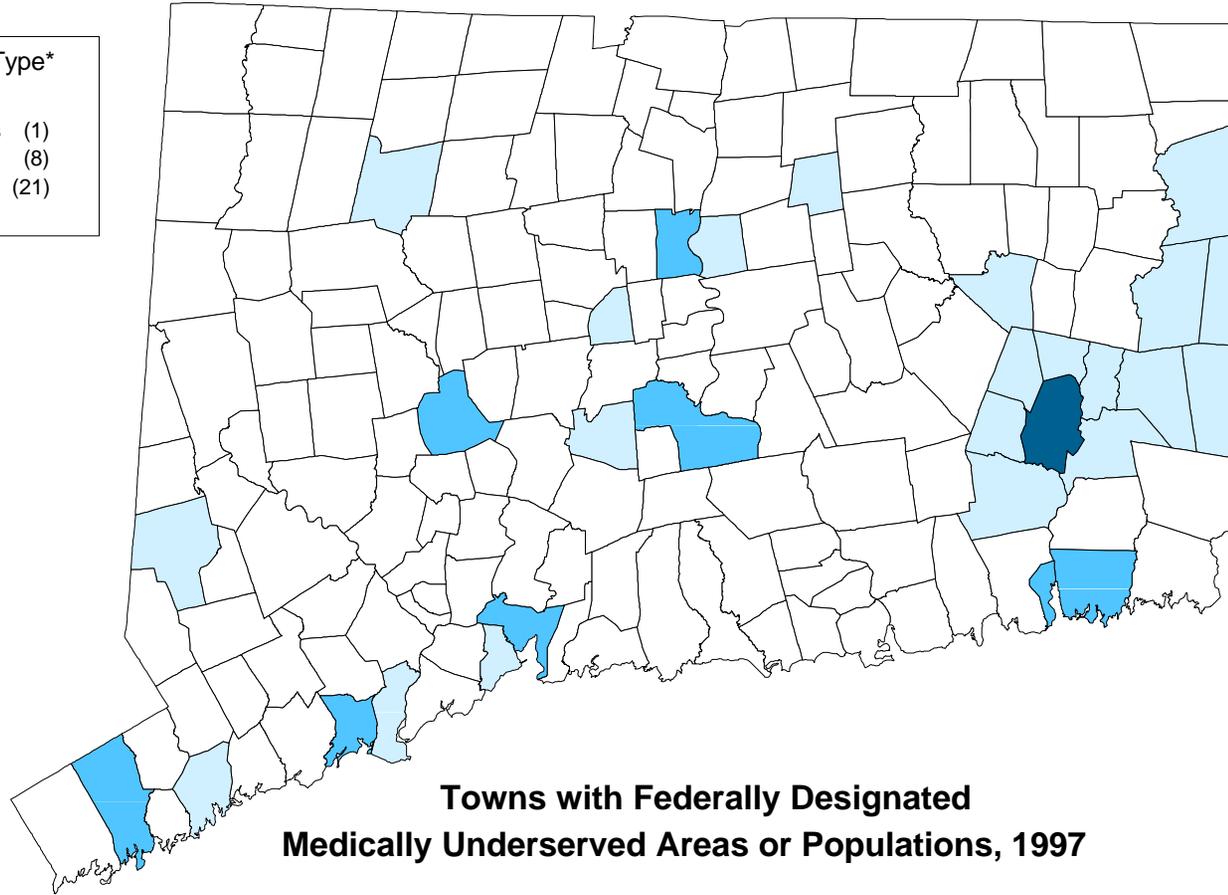
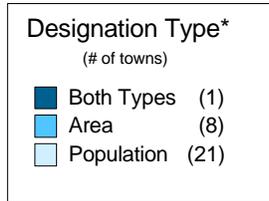
The composition and disciplines represented on each center’s full-time medical staff, and the services offered are primarily determined by the needs of the community. At least one-half of each center’s full-time equivalent primary care providers must be full-time, paid members of the staff. Center staffing may also be supplemented through resources from the National Health Services Corps<sup>33</sup> or through other collaborative efforts and support from state and local providers. An important element of the full-time staffing requirement is that it provides continuity of care and treatment to CHC patients

Since 1990, CHCs have submitted utilization, payer mix, and demographic information by state fiscal year (July 1- June 30) to the DPH. Utilization of CHC services has more than doubled during the last six years, from 224,250 visits in SFY 1990 to 484,408 visits in SFY 1996 (Figure 4-6). Similarly, the number of unduplicated clients nearly doubled during the same period, increasing from approximately 80,000 unduplicated clients in SFY 1990, to almost 160,000 in SFY 1996. The annual number of visits per unduplicated client has remained relatively stable at three (Figure 4 - 7).

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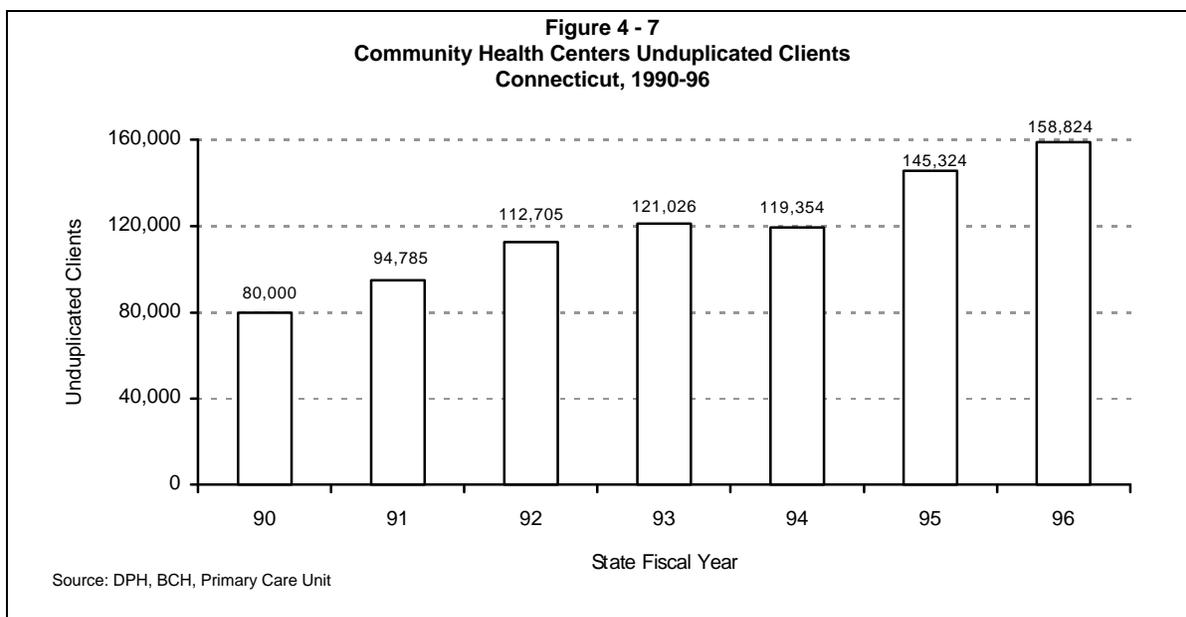
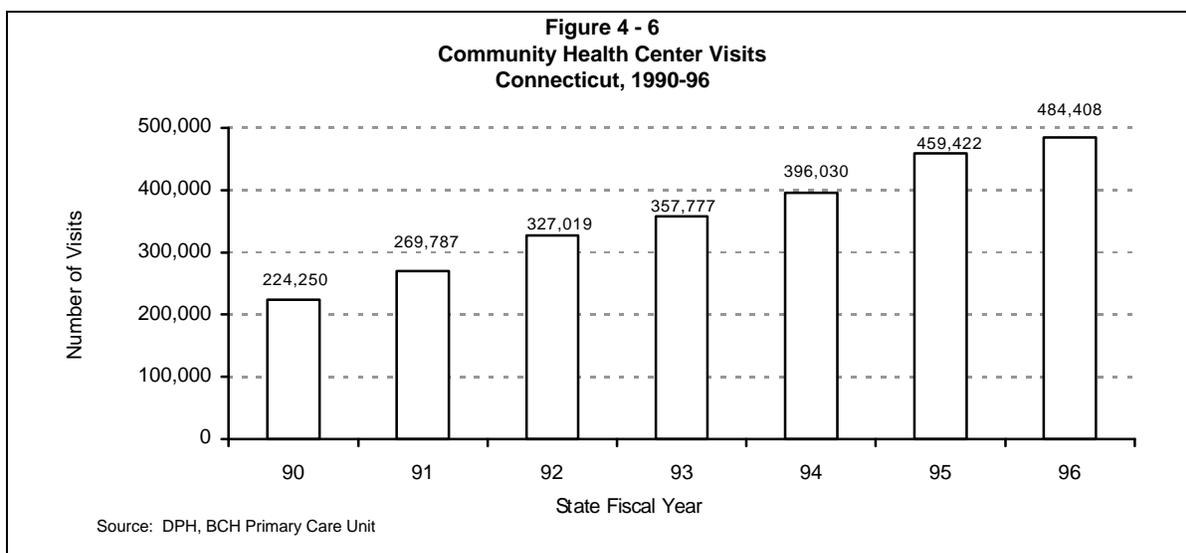
<sup>33</sup> National Health Services Corps is a federal scholarship program established in 1970 to recruit and place health professionals in health professional shortage areas.

Map 4-5

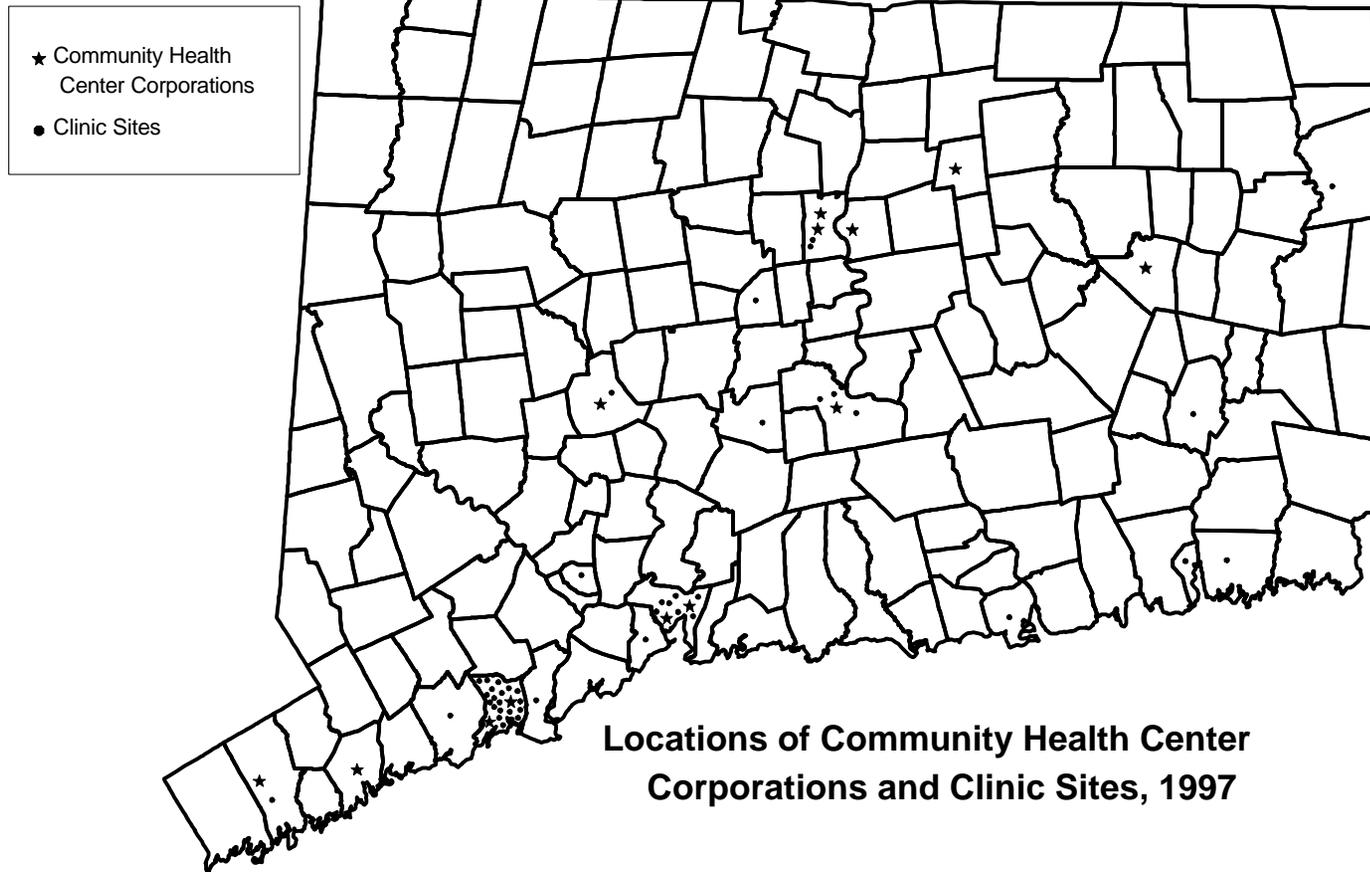


\* The indicated areas or populations typically do not encompass an entire town.  
Source: USDHHS, HRSA, BPHC, BHCDANet Federal database, 5-97

CHCs are mostly used by infants and children, women of child-bearing years, and minorities. For instance, during SFY 1996, 46% of the clients were aged 0 to 19 years. Forty-eight percent of the female clients were of child-bearing age (15-44 years old). Fifty-two percent of the clients were Hispanic and 30% were black. No clinical data are available to identify the kinds of health conditions that were treated, or the outcomes of the treatments.



Map 4-6



Note: The stars and dots denoting the center corporations and clinics fall randomly within a town's border and are not actual site locations.  
Source: DPH, BCH & HSRD, 1998

After remaining relatively stable for five years, Connecticut's CHCs shifted in payer mix from SFY 1995 to SFY 1996 (Table 4-29). The percentage of charges paid by Medicaid dropped from a high of 50% in SFY 1995 to 42% in SFY 1996, whereas payments by private insurance companies increased from 11% to 16%, and self-pay increased to 25%.

**Table 4 - 29**  
**Community Health Centers Payer Mix<sup>a</sup>**  
**Connecticut, 1993-96**

Payer	1993	1994	1995	1996
Medicaid	47.7%	45.4%	49.5%	42.1%
Self-Pay	22.9%	23.8%	21.0%	24.9%
Private Insurance & Other	10.3%	9.8%	10.8%	15.9%
City Welfare	14.9%	17.1%	14.5%	13.5%
Medicare	4.3%	3.9%	4.2%	3.5%

<sup>a</sup>Does not include Community Health Center, Inc. data.  
Source: DPH, BCH, Primary Care Unit

As CHCs are the major source of primary health care for the uninsured and underinsured, and have historically provided low cost or free health care to all persons in need, adequate reimbursement continues to be an issue. While services and treatments may be "free" to the patient, CHCs incur costs to render their services. Unless the CHCs receive adequate reimbursement from patients or third party payers, or funding from grants, they may be forced out of business, ultimately reducing access to medical care for those with the greatest needs.

An updated discussion of community health centers appears in Appendix G, the Safety Net Providers report.

## HEALTH WORKFORCE

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### CONNECTICUT'S MEDICAL PROFESSIONS INVENTORY

The information in this section was obtained from the medical professions licensure data base, maintained by the DPH Division of Health Systems Regulation (HSR). The HSR division licenses 55 medical and health-related professions. Licensed individuals are not necessarily actively practicing professionals, rather they are individuals who hold a valid license to practice, and the potential to practice.

Other health care professionals, such as physical therapy assistants, are required to register with the DPH, but are not licensed and do not undergo a renewal process. Table 4-30 presents the total number of licenses issued in Connecticut during 1990 and 1995 for selected medical professions.

## Physicians

In 1995, there were 368 licensed physicians per 100,000 population in Connecticut which is much greater than the national average of 252 nonfederal physicians per 100,000 civilians.<sup>34</sup> This supports the results of other studies which found that physicians appear to be maldistributed across the country.<sup>35</sup>

**Table 4 - 30**  
**Licensed Persons in Selected Medical Professions**  
**Connecticut, 1990 and 1995**

Medical Professions	1990 <sup>a</sup>	1995 <sup>a</sup>	1995 Licensed Professionals per 100,000 Population <sup>b</sup>
Physician/Surgeon	10,964	12,100	368
Registered Nurse	47,815	48,322	1,469
Licensed Practical Nurse	11,659	11,465	349
Advanced Practice R.N.	51	1,155	35
Nurse Midwife	86	119	4
Physician Assistant	0	513	16
Physician Asst. Supervisor	0	411	13

<sup>a</sup> Total FTE values are unavailable. Source: DPH, BRS, Division of Health Systems Regulation.

<sup>b</sup> Based on 1995 total population of 3,289,090 persons.

Source: *Connecticut Population Projections, Series 95-1*, Office of Policy and Management, September, 1995.

## Nurses

Traditionally, the majority of nurses worked in hospital-based settings. In recent years, however, the continued growth of managed care, shrinking inpatient admissions, and shorter lengths of stay have led to hospital downsizings and closings. In Connecticut, one hospital, the Winsted Memorial Hospital in Winchester, closed in 1996.

These service delivery changes precipitated a decline in the number of available hospital jobs, and shifted all levels of nurses toward employment in other non-hospital based settings. Increasingly nurses are employed in community-based services, ambulatory care environments, home health care, or in the long term care industry.

The total number of registered nurses and licensed practical nurses remained relatively static from 1990 to 1995. On the other hand, there appears to have been an explosive growth in the number of licensed advanced practice nurses (APNs) from 51 to 1,155, which may be due partially to the fact that the licensure program didn't start until November 1990. The number of nurse midwives grew by 38% during this period.

Under Connecticut's General Statutes, advanced practice nurses are licensed under a separate licensing category that allows the licensee to provide care and dispense prescriptions under the direct supervision of a state licensed physician. During the 1997 legislative session, statute revisions were proposed that would remove the physician supervision clause from the statutes for advanced practice nurses. The bill died in committee. However, it is likely that similar legislative bills designed to force reconsideration of the scope of practice among physicians, physician assistants and nurse practitioners will appear in future years, driven by a growing managed care enrollment and a tightening job market for health care professionals.

## Physician Assistants

Physician Assistants (PAs) represent another rapidly growing segment of the health professional workforce that directly affect the provision of primary care services. Respondents to a recent American Academy of Physician Assistants (AAPA) survey described their employment settings as follows: slightly

<sup>34</sup> Moore Jr., J. Duncan. Ranks of physicians continue to swell. *Modern Healthcare*, (4 Mar 96): p 2-3.

<sup>35</sup> Council on Graduate Medical Education Third Report. *Improving Access to Health Care Through Physician Workforce Reform: Directions for the 21st Century*. U.S. Department of Health and Human Services, (Oct 92).

over 36% are hospital-based, 32% work in a group or single practice office, while a little over 10% provide services in a rural or urban city health clinic.<sup>36</sup>

## OVERSUPPLY AND SHORTAGES

In 1986, Congress authorized the Council on Graduate Medical Education (COGME) to provide ongoing assessments and recommendations regarding the nation's physician workforce. Since that time, COGME's reports have repeatedly expressed concern that our medical schools are graduating more physicians than are needed.

In 1995, COGME published its physician surplus estimates for the years 2000 and 2010. By the turn of the century, COGME expects there will be a 125,000 specialist surplus and a 20,000 generalist shortage. Ten years later, the specialist physician surplus is expected to reach 170,000, while the generalist shortage will shrink to only 8,000. These conclusions were based on COGME's "reasonable projected requirements" range of 85 to 105 specialists per 100,000 population, and 60 to 80 generalists per 100,000 population.<sup>37</sup>

These dire predictions of physician oversupply are echoed in a number of studies including a 1995 study by the Pew Health Professions Commission.<sup>38</sup> While the degree of oversupply, methods of determination, and proposed remedial actions are a matter of contention, most studies project a surplus of physicians by the year 2000. Recently, increases in the number of medical school graduates electing primary care residencies, coupled with the potential for increased roles for advanced practice nurses and physician assistants have led to some speculation that the primary care physician shortage could disappear sooner than originally expected.

## HEALTH PROFESSIONAL SHORTAGE AREAS

Although Connecticut has a reported high physician per capita total, it has a number of regions that are designated as Health Professional Shortage Areas (HPSA) for primary medical care. A HPSA is an area designated by the federal Secretary of Health and Human Services, under authority of Section 332 of the Public Health Service Act as having an inadequate supply of health care providers. HPSA designations for primary medical care may be made if it can be demonstrated that (1) the area meets the HPSA criteria as a rational service area for the delivery of primary medical care services; (2) access barriers exist that prevent population groups from using the area's primary medical care providers; and (3) the ratio of the number of persons in a population group to the number of primary care physicians practicing in the area and serving the population groups is at least 3,000 to 1. During 1997, various portions of 28 Connecticut towns were federally designated as primary medical care HPSAs as shown in Map 4-7.

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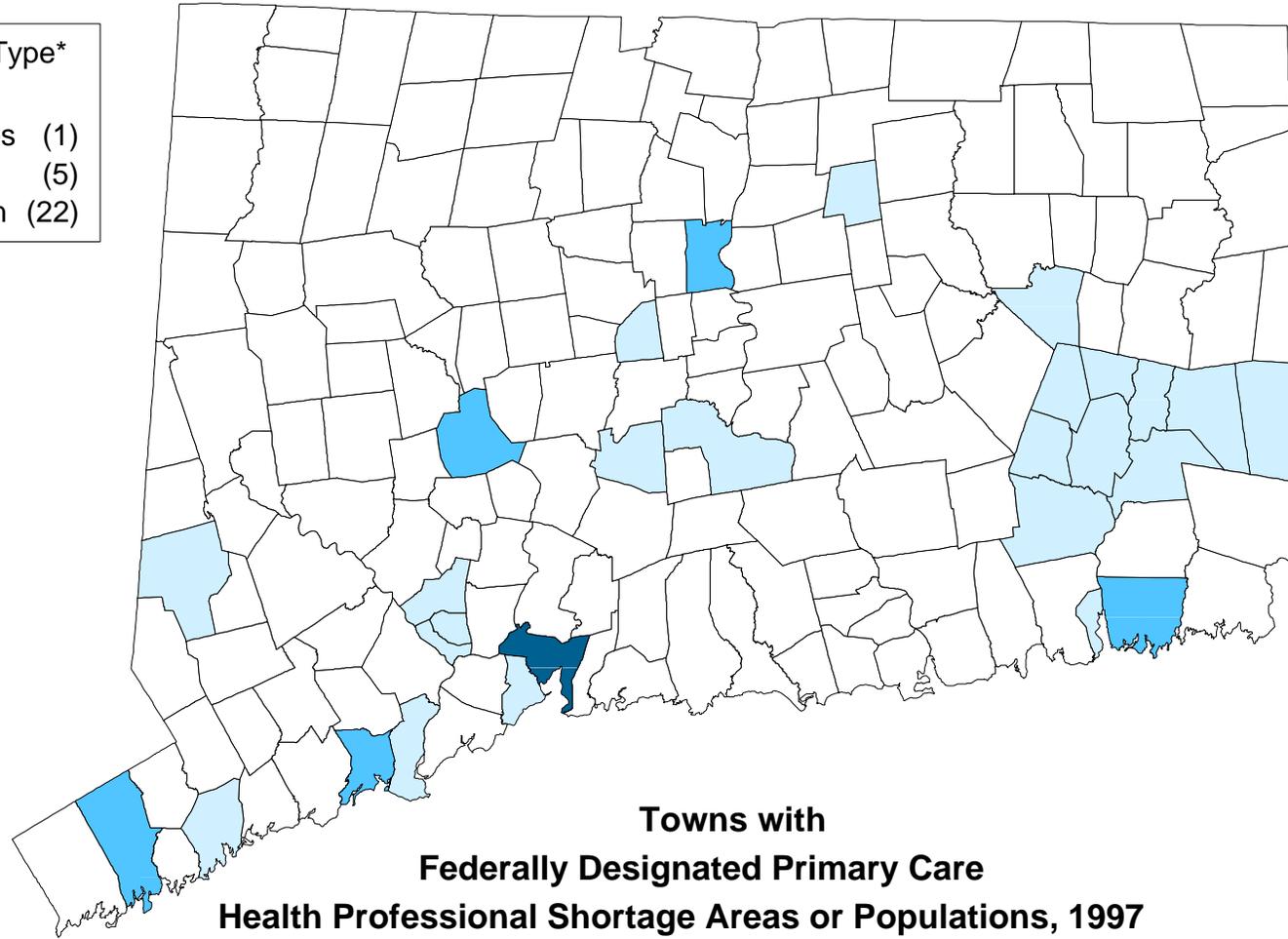
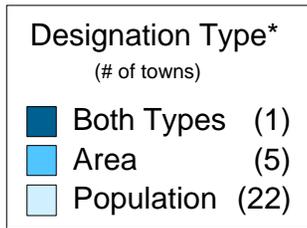
<sup>36</sup> 1996 AAPA Physician Assistant Census Report: American Academy of Physician Assistants, Alexandria, VA, <http://www.aapa.org/research/censusa.htm>.

<sup>37</sup> Council on Graduate Medical Education Sixth Report. *Managed Health Care: Implications for the Physician Workforce and Medical Education*. Rockville, MD: DHHS, (Sept 95).

<sup>38</sup> Pew Health Professions Commission. *Critical Challenges: Revitalizing the Health Professions for the Twenty-first Century*. San Francisco: University of California, Center for the Health Professions; 1995.



Map 4-7



\* The indicated areas or populations typically do not encompass an entire town.  
Source: Federal Register 5-30-97

## MANAGED CARE AND THE WORKFORCE

Increases in managed care enrollments are influencing the health care workforce supply and demand. For example, the increasing demand for primary care physicians is largely the response to managed care's use of a "gatekeeper" function, and the reduction in employment opportunities for certain hospital-based specialists. The continuing inpatient to outpatient shift has already manifested itself in fewer job opportunities for newly graduated physicians in some hospital-based services such as anesthesiology, radiology and pathology.<sup>39</sup>

Managed care's emphasis on illness prevention, earlier discharges, ambulatory versus inpatient care, cost containment, service volume, and reimbursement controls have already altered the way physicians deliver services and in some cases have reduced their incomes.

By collecting and monitoring data elements pertaining to outpatient services and managed care staffing, Connecticut would have the necessary information to address health care planning, workforce, and cost issues more effectively.

## MEDICAL EDUCATION

Despite the influence of managed care, predictions of physician oversupply, and lowered physician incomes, the total number of annual physician graduates has actually increased in recent years. Some of this growth is attributed to increases in the numbers of female and minority graduates. Another factor is the increasing number of international medical students, who study in the United States and remain to practice after graduation.

Over the years, medical teaching institutions have had little incentive to downsize their training programs, change their mix of specialists and generalists, or update their curricula to address the managed care environment because Medicare has heavily subsidized residency training programs. In the nation's 1997 budget agreement, the federal government has agreed to pay hospitals millions of dollars not to train doctors in an effort to alleviate the oversupply of physicians.<sup>40</sup>

## NEED FOR DATA

An appropriate supply of health care professionals will be a key factor in governing the provision of cost effective health care services to Connecticut's citizens in the future. Knowing the number of actively practicing primary and specialty care providers in Connecticut, their areas of expertise, and their distribution across the State is a vital part of this process. Currently, insufficient information exists in the public sector's data base to create even the most rudimentary state and regional health workforce inventory, or to determine the existence or extent of any workforce maldistribution. A cooperative data collection effort is needed, across public and private sectors, to assure that adequate health care personnel demographics are readily available. This basic information is essential to support state and regional planning efforts and the state's federal block grant and surveillance responsibilities.

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<sup>39</sup> Moore, Jr., J. Duncan. First job hard to find for some specialists: *Modern Healthcare*, (18 Mar 96), p 28.

<sup>40</sup> Goldstein, Amy. U.S. will pay teaching hospitals to train fewer doctors. *Washington Post*, (25 Aug 97) Sec A, p 8.

## CHAPTER 5

# CONNECTICUT'S PUBLIC HEALTH PRIORITIES

The role of public health is to respond to social, medical, and environmental challenges to health with the goal of reducing the incidence of disease, disability, and premature death within a population. Chapters 1 and 2 of this report describe the infrastructure that protects the health and safety of the population and the emerging issues facing public health. Chapters 3 and 4 provide an assessment of Connecticut's health status and several components of the existing health service delivery system. Based on this information, the Department of Public Health (DPH) has determined the most significant problems affecting the public's health in Connecticut and has set specific priorities for policy and program development for the future.

In this chapter, DPH identifies 25 public health priorities for promoting the increased expectancy and quality of life for state residents. The priorities are divided into three groups: health status, health services, and essential public health programs. Health status priorities focus on reducing mortality and morbidity by targeting problems that are modifiable. Health service priorities focus on improving the quality and accessibility of the state's personal health services. Essential public health programs support activities that assure protection from preventable environmental and infectious diseases, and regulate personal health care standards.

This chapter also presents the process and rationale used to identify and rank the priorities. Four focus areas were determined to have the greatest impact on the people of Connecticut and require attentive policy and program development during the next biennium.

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### DEVELOPING THE PRIORITIES

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To select the public health priorities, criteria were chosen based on DPH's responsibility to provide certain basic, core public health programs, and the concepts of disease burden and modifiability. DPH's obligation to provide core public health programs is founded on its statutory responsibilities. These programs are the foundation for the high standards of health experienced by Connecticut residents today. Disease burden represents one way to evaluate the overall magnitude and seriousness of a health problem. Finally, modifiability refers to the ability of a health problem to be improved by an intervention. In this document DPH is emphasizing the modification of personal behaviors to reduce an individual's risk of premature mortality or morbidity. These considerations resulted in the formulation of 25 public health priorities.

### JURISDICTION

The Institute of Medicine describes the core functions of state public health agencies as assessment, policy development, and assurance.<sup>1</sup> Assessment is a process that identifies current public health threats through the collection and analysis of information. Policy development is a process of developing options for addressing public health issues. Assurance is following through to see that the adopted policies are effectively carried out. The core function of assurance includes guaranteeing a minimum set of appropriate health services to a population and maintaining an adequate statutory foundation for health activities.

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<sup>1</sup> Chapter 1 also discusses the Institute of Medicine report.

DPH is Connecticut's lead agency in public health policy, practice, and advocacy. It is DPH's statutory responsibility to protect the health and safety of Connecticut's residents and to prevent disease and promote wellness. DPH collects and analyzes health data; monitors infectious diseases, and environmental and occupational health hazards; regulates health care providers; and provides financial support to local public health agencies and jurisdictions. Public health agencies, such as local health departments, school-based health centers, and community health centers, assume responsibility for the delivery of health services to those with inadequate insurance coverage because private sector providers determine that they have no financial incentive or social responsibility to serve them.<sup>2</sup>

Other state agencies also have jurisdiction in areas that affect public health. The Department of Environmental Protection is responsible for managing air quality by controlling air pollution, monitoring water quality and preventing water pollution, and regulating the treatment, storage, disposal, and transportation of hazardous substances. The Department of Mental Health and Addiction Services (DMHAS) is responsible for assessing, planning for, and addressing the mental health and substance abuse problems in the state. For this reason the public health priorities in the *Assessment* do not address mental health issues, however DMHAS's most recent mental health and addiction service assessments are summarized in Appendix D.

## BURDEN OF DISEASE

To improve the health of Connecticut's residents requires a reduction in the overall burden of disease. The term "disease burden" is used to describe the impact of a disease on the population. Indicators of mortality and premature mortality were used to quantify the disease burden of different health conditions for the purpose of setting the priorities. Mortality indicators consist of both the number of deaths and age-adjusted mortality rates. The indicator of premature mortality was the years of potential life lost before age 65 (YPLL).<sup>3</sup> This indicator emphasizes diseases or injuries that occur early in life, and is correlated with both human and economic losses to society.<sup>4</sup>

## MODIFIABLE RISK FACTORS

To effectively reduce the burden of disease, public health efforts must address the circumstances which cause disease. People engage in many behaviors which increase their risk of disease. These behaviors, or risk factors, are related to a variety of biological, social, and environmental circumstances and are often modifiable. Risk factors have been described as the "actual" causes of death since they contribute substantially to or are the primary reasons for one or more specific morbid conditions. For example, smoking is one of the most important modifiable causes of lung cancer, cardiovascular disease, chronic lung disease, musculo-skeletal disease, and stroke (See Table 5-1).

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<sup>2</sup> Gordon RL, Baker EL, Roper WL, Omenn GS. Prevention and the reforming U.S. health care system: changing responsibilities for public health. In: Omenn GS, Fielding JE, Lave LB., editors. *Annual Review of Public Health*. Palo Alto: Annual reviews, Inc. 1996: 489-509.

<sup>3</sup> A definition of "years of potential life lost before age 65" is contained in the Glossary, Appendix O.

<sup>4</sup> Murray CJ, Lopez AD. Alternative visions of the future: projecting mortality and disability, 1990-2020. In: Murray CJL, Lopez AD, eds. *The Global Burden of Disease*. Cambridge: Harvard University Press, 1996.

**Table 5-1**  
**Relationships between Modifiable Risk Factors and**  
**Various Chronic Diseases**  
 (“+”=an established risk factor; “?”=a possible risk factor)

Risk Factor	CVD <sup>a</sup>	Cancer	Chronic Lung Disease	Diabetes	Cirrhosis	Musculo-skeletal Disease	Neuro-logic Disorder
Tobacco Use	+	+	+			+	?
Alcohol Use	?	+			+	+	+
High Cholesterol	+						
High Blood Pressure	+						
Diet	+	+	?	?		+	?
Physical Inactivity	+	+		+		+	
Obesity	+	+		+		+	+
Stress	?	?					
Env. Tobacco Smoke	?	+	+				
Occupation		+	+		?	+	?
Pollution		+	+				+
Low SES <sup>b</sup>	+	+	+	+	+	+	

<sup>a</sup> Cardiovascular disease, <sup>b</sup> Socioeconomic Status

Source: *Chronic Disease Epidemiology and Control*, R.C. Brownson, P. L. Remington, J. R. Davis, (Eds.) American Public Health Association, 1993

For the United States, the top actual causes of death are tobacco, diet and physical inactivity, alcohol misuse, microbial agents, toxic agents, firearms, sexual behavior, motor vehicle accidents, illicit use of drugs, and lack of access to primary care.<sup>5</sup> Elevated blood cholesterol and blood pressure are risk factors, but are influenced by more basic elements such as body weight, diet, physical activity, and medical interventions such as drug therapies. Although actual causes were developed from U.S. data, Connecticut data confirm the importance of tobacco, alcohol, and firearms as major causes of premature death.<sup>6</sup> To reap the maximum health benefits, risk factors should be modified early in life. However, reducing risk factors at any age benefits health status in later life, including persons aged 65 years and over. This is well documented for modifications of smoking, diet, and physical inactivity.<sup>7</sup>

DPH's ranking of the priorities was based on the data-driven analyses of disease burden, risk factors, and public health's essential services. It was also informed by the agency's key critical functions as it is currently configured. The final state health priorities are ranked within three categories: health status, health services, and essential public health programs.

### Public Review and Comment

DPH intended the 1997 draft of *Looking Toward 2000* to provide the health community with a rational context for setting priorities for improved health for all Connecticut residents. Over 750 draft *Assessments* were distributed to representatives of the legislature, state government, local health departments and districts, health care providers, professional organizations, community agencies, and individuals. DPH offered 6 public hearings throughout the state during the Spring of 1998 to solicit comments on the

<sup>5</sup> McGinnis JM, Foege WH. The actual causes of death in the United States. *Journal of the American Medical Association*. 1993;270(18):2007-12.

<sup>6</sup> See Chapter 3, "Behavioral Risks."

<sup>7</sup> Brownson, RC, Remington, PL, Davis, JR, Editors. *Chronic Disease Epidemiology and Control*. American Public Health Association: Washington, DC. 1993.

document. Some of the comments encouraged future planning efforts to focus on special population groups such as children, the elderly, and racial and ethnic minorities. Many comments dealt with the lack of available data to perform local assessments of health status and the need for health services. Other comments identified mental health and substance abuse as major public health concerns.

## CONNECTICUT'S RANKED PRIORITIES

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### HEALTH STATUS PRIORITIES

1. Prevention and cessation of tobacco use
2. Reduction of the factors associated with intentional, unintentional, and occupational injury
3. Improvement in rates of breast, cervical, and colorectal cancer screening and follow-up
4. Improvement in rates of hypertension detection and control
5. Improvement in rates of diabetes monitoring and control
6. Improvement in diet and rates of blood cholesterol monitoring and control
7. Further determination and reduction of the factors associated with adverse pregnancy outcomes
8. Reduction of risky sexual behavior that leads to acquisition of HIV/AIDS, STDs, and unwanted pregnancy
9. Reduction of physical inactivity
10. Reduction of alcohol abuse
11. Reduction of illicit substance use and practices associated with transmission of infectious diseases

### HEALTH SERVICES PRIORITIES

1. Reinforce and strengthen the public health infrastructure
2. Focus resources on the collection, analysis, interpretation, and dissemination of health data and information for better monitoring of the health care delivery system
3. Promote the development of adequate programs and services for persons 65 years of age and older
4. Monitor the growth and development of managed care and its impact on the delivery and utilization of personal health care services
5. Expand access to affordable health insurance and primary and preventive health care services to the uninsured and underinsured

### ESSENTIAL PUBLIC HEALTH PROGRAMS

1. Infectious disease control
  - 1.1. Monitoring and control of all infectious diseases
  - 1.2. Investigation of outbreaks of infectious diseases and food poisoning
  - 1.3. Immunization programs
2. Health provider quality assurance
  - 2.1. Setting and enforcing standards for professional provider qualifications and provider and facility quality assurance
3. Environmental assurance
  - 3.1. Protection of food and water through the setting and enforcing of quality standards
  - 3.2. Lead abatement in housing and testing of children for blood lead levels
4. Health services assurance
  - 4.1. Setting and enforcing standards for preventive health care
  - 4.2. Assuring the provision of health care services to underserved populations
  - 4.3. Family nutrition programs

## HEALTH STATUS PRIORITIES

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DPH's eleven health status priorities are based on reducing known risk factors and promoting early interventions for leading causes of mortality and premature mortality. The priorities address the reduction of the use of tobacco, alcohol, and illicit substances; risky sexual behaviors; and factors resulting in injuries and adverse pregnancy outcomes. They promote the expansion of screening and monitoring for cancer, diabetes, hypertension, and cholesterol; the improvement of diet; and greater participation in regular exercise. These priorities identify major opportunities to further improve the health and quality of life of Connecticut residents.

### 1. Prevention and cessation of tobacco use

Tobacco use is the single most important avoidable cause of death. An estimated 19% of all deaths in Connecticut in 1997 can be attributed to smoking. Abstinence from tobacco may prevent 90% of lung cancer deaths, the leading cause of cancer deaths in Connecticut. Tobacco use is a risk factor for heart disease, chronic lung disease, and cancers of the larynx, esophagus, pharynx, mouth, pancreas, kidney, cervix, and bladder. The consequences of tobacco use during pregnancy include spontaneous abortions, low birthweight, and sudden infant death syndrome.

Tobacco use also affects persons who do not engage in the behavior. Exposure to cigarettes, or environmental tobacco smoke (ETS), contributes to the development of acute and chronic illnesses that result in premature loss of life. Exposure to ETS is a significant public health problem because it worsens symptoms in children who have asthma and is a risk factor for the development of asthma in healthy children. Exposure to ETS increases respiratory disease symptoms, such as wheezing, coughing, and sputum production; decreases lung function; and increases the incidence of middle ear infection.<sup>8</sup>

### 2. Further determination and reduction of the factors associated with intentional, unintentional, and occupational injuries

Unintentional injuries are the leading cause of death for people between the ages of 1 and 34. In 1994 in Connecticut, they were the third leading cause of death based on age-adjusted mortality rates and the sixth leading cause of death based on the total number of deaths. More children and adolescents die each year from unintentional injuries than from all other childhood diseases combined. Motor vehicle crashes are the leading cause of unintentional injury deaths in Connecticut, accounting for one-third of all unintentional injury deaths, an average of nearly one death per day. Intentional injuries, including homicides and suicides, rank third in terms of premature death rates. Young adults between the ages of 15 and 34 years represent 72% of all homicide deaths. Black males between the ages of 15 and 34 years account for 1.5% of the population but 30% of 1994's homicide deaths. Firearms were used in seven out of ten homicide deaths and nearly half of Connecticut's suicides.

### 3. Improvement in rates of breast, cervical, and colorectal cancer screening and follow-up

Several types of cancer were selected as priorities based on high incidence rates and the availability of effective screening tests that can detect cancers at an early stage. Breast cancer is the second leading cause of cancer deaths in women. Mammography and clinical breast examination are important tools in reducing breast cancer mortality through detection at an early stage. Unfortunately, nearly one-third of Connecticut's women with breast cancer have been detected at later stages of development, after metastasis had occurred. Invasive cervical cancer is largely preventable by means of early screening to detect the disease at pre-invasive stages. A reduction in deaths from colorectal cancer can also be achieved through detection and treatment of early-stage cancers.

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<sup>8</sup> U.S. Environmental Protection Agency. *The Health Effects of Passive Smoking*. Washington, D.C.: 1993.

#### 4. Improvement in rates of hypertension detection and control

High blood pressure (hypertension) is a major risk factor for stroke and heart disease. Nearly one in five Connecticut adults have been told their blood pressure was high. Because it has no clear, overt symptoms, regular blood pressure monitoring is needed for detection and control. Weight control, physical activity, lower salt intake, a non-smoking lifestyle, and moderate or low alcohol consumption can reduce the risk of hypertension.

#### 5. Improvement in rates of diabetes monitoring and control

Diabetes was the seventh leading cause of death in Connecticut in 1996. It is also a disease that leads to other diseases. Diabetes is associated with cardiovascular disease, hypertension, neuropathies, and peripheral vascular disease and its sequelae (e.g., amputations). Diabetes is the leading cause of end-stage renal disease and blindness among working-age adults. Over 900,000 Connecticut adults are estimated to be at risk of undiagnosed diabetes based on age, obesity, a sedentary lifestyle, or a history of gestational diabetes. The serious complications of diabetes can be prevented or delayed with early diagnosis and treatment.

#### 6. Improvement in diet and in rates of blood cholesterol monitoring and control

Improvement in diet is a priority because it is relatively easy to modify. A poor diet is an important risk factor for serious and costly chronic health conditions. A poor diet, such as one high in saturated fat, increases a person's risk for high cholesterol, hypertension, and obesity. All three of these conditions increase a person's risk of cardiovascular disease. A poor diet, along with obesity, also increases a person's risk for colon, breast, and prostate cancer, and type-II diabetes. Recent data indicate that in Connecticut more than one person in four are obese; one person in three in some distinct subpopulations.<sup>9</sup> Almost half a million state residents, or one in seven, have been told their cholesterol was high.

Positive diet modifications include substantially decreasing the intake of fat, especially saturated fat, and substantially increasing the intake of fruits and vegetables, and other fibers, to reduce the risk of cancer, heart disease, and certain birth defects.

#### 7. Further determination and reduction of the factors associated with adverse pregnancy outcomes

Low birthweight (<2,500 grams) is a measure of the adequacy of fetal growth during pregnancy. It is strongly associated with infant mortality and long-term health problems for a child, such as mental retardation, cerebral palsy, and vision and hearing disabilities. Low birthweight can be prevented by improvement in maternal nutrition; reduction or elimination of tobacco, alcohol, and illicit substance use; reduced exposure to environmental toxins; and promotion of early and regular prenatal medical care.

#### 8. Reduction of risky sexual behavior that leads to acquisition of HIV/AIDS, STDs, and unwanted pregnancy

Reduction of risky sexual behavior through educational programs can decrease the prevalence of sexually transmitted diseases (STDs), HIV, and unwanted pregnancies. Syphilis, for example, can cause debilitating nervous system disorders and death in both infected adults and newborns, and it is also a risk factor for HIV transmission. HIV/AIDS is a leading cause of premature mortality and nearly one-third of the reported cases in 1995 were acquired from sexual contact. Unwanted pregnancies are often associated with poor prenatal care which leads to newborns who are low birthweight or premature, and other increased health risks for the mother and child. The rate of low birthweight births has not improved in Connecticut for ten years and remains a major challenge for family health programs.

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<sup>9</sup> See Chapter 3, "Diet and Overweight."

9. Reduction of physical inactivity

Regular exercise has the potential to reduce the risk of cardiovascular disease, several types of cancer, and diabetes. Regular exercise also has beneficial effects on hypertension, weight control, osteoporosis, anxiety, and depression.

10. Reduction of alcohol abuse

Alcohol abuse has been linked to heart disease, cancers, hepatitis, cirrhosis of the liver, and other diseases (See Table 5-1). It is a factor in about half of all motor vehicle fatalities, and can adversely affect birth outcomes. In 1995, the prevalence of drinking reported by Connecticut adults was 64.8%.

11. Reduction of illicit substance use and substance use practices associated with transmission of infectious diseases

Injection drug use remains the leading means of HIV transmission. Despite the downward trend in AIDS mortality, the magnitude and epidemiology of AIDS continue to pose major challenges to prevention. In 1995, HIV infection was the seventh leading cause of death overall and the leading cause of death for Connecticut residents aged 25-44 years. One hundred fifty-nine out of 169 Connecticut towns have had at least one AIDS case among their residents.

## HEALTH SERVICES PRIORITIES

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State public health departments are responsible for assessing the health service needs of the people living in their jurisdictions, and assuring them access to a certain basic set of quality health care services.<sup>10</sup> Providing better access to health care services can reduce mortality, premature mortality, and morbidity. Bunkner, Frazier, and Mosteller<sup>11</sup> estimated that for a person born in the 1990's, the health care system contributed about 5 years (7%) to their life expectancy. If access to efficacious services were extended to more people, they estimated that the health system had the potential to contribute up to 2.5 additional years. McGinnis and Foege<sup>12</sup> cited a Carter Center project which indicated a lack of access to primary care accounted for 7% of premature deaths before age 65 and 15% of YPLL, substantial portions of which were due to infant deaths. If these estimates were applied to Connecticut, the lack of access to primary care would account for almost as many YPLL as tobacco, heart disease, or alcohol. The health services priorities address access to care for vulnerable populations, the development and dissemination of better health data, and the maintenance of quality health services for the state's residents.

### 1. Reinforce and strengthen the public health infrastructure.

The public health infrastructure consists of the federal, state, and local governments' capacity to meet the basic responsibilities of preserving the health of the community. Examples of these responsibilities are disease surveillance and epidemiological investigations, the collection and analysis of vital statistics, public health education, laboratory analysis, the regulation of food and water quality, the licensure of health service providers, and administration.

Historically, public health agencies have also assumed responsibility for the delivery of health services to those with inadequate insurance coverage.<sup>13</sup> Until about ten years ago, funding to provide health services to inadequately insured people came through direct grants or was cost-shifted from other payers. Recently, grant funding has declined, and because of managed care's cost containment pressures, the ability of public health providers to shift costs from other payers has diminished. This situation places the financial viability of agencies like community health centers and school-based health centers at risk at a time when the need for these services is expanding rapidly. The need to develop a strategy to reinforce and strengthen these traditional public health providers is urgent.

### 2. Focus resources on the collection, analysis, interpretation, and dissemination of health data and information for better monitoring of the health care delivery system

Public health's core functions of assessment and assurance depend upon the availability of health data and information. In Connecticut, large amounts of health data are available in the public and private sectors. These data should be linked, analyzed, and disseminated to local health agencies, health providers, governmental agencies, and other interested parties. However, there are obstacles to data availability that limit assessment, monitoring, planning, and other important public health activities. For example, the cost of obtaining health data is prohibitive for some agencies.

Specific needs for data are:

- ◆ local data on behavioral risk factors, targeting vulnerable populations;

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<sup>10</sup> Committee for the Study of the Future of Public Health. *The Future of Public Health*. Washington, D.C.: National Academy Press, 1988.

<sup>11</sup> Bunkner JP, Frazier HS, Mosteller F. The role of medical care in determining health: creating an inventory of benefits. In Amick BC, III, Levine S, Tarlov AR, Walsh DC. *Society and Health*. New York: Oxford University Press, 1995.

<sup>12</sup> McGinnis JM, Foege WH.

<sup>13</sup> Gordon RL, Baker EL, Roper WL, Omenn GS.

- ◆ data related to people's risk of poor health outcomes, such as data on personal income, socioeconomic status, access to health insurance, and access to health services;
- ◆ data on disability and quality of life, especially in the older population;
- ◆ data on ambulatory care services provided in institutions or physicians' offices, important because of the role of ambulatory care services in the contemporary health care marketplace;
- ◆ measurable health outcome data on the performance of health providers and managed care organizations, so that the public can meaningfully evaluate them when selecting health services; and
- ◆ data on provider types, specialties, and locations of practice, valuable in determining where services are needed.

In order to monitor the health status of the population, to assess its health care needs, and to assure the community that adequate services are being provided, access to better state data on health and health services is needed.

### 3. Promote the development of adequate programs and services for persons 65 years of age and older

The aging of the population has many implications for public health. While the total Connecticut population is projected to increase by only 9% from 1995 to 2020, the segment of the population aged 65 years and older will increase by 35%. As the population ages, the prevalence of chronic health conditions that predominantly affect the elderly will increase.

In Connecticut, seniors are the biggest consumers of personal health care services *per capita*, both in terms of volume and dollars, of any single demographic group. In 1995, people over age 64 accounted for more hospitalizations for heart disease, digestive system disorders, cancer, injuries, pneumonia, cerebrovascular disease, chronic obstructive pulmonary disease, and diabetes than any other age group. People over the age of 64 years accounted for 93% of days spent in nursing home facilities and 68% of home health care clients.

These facts emphasize the importance of having a clear, comprehensive, practical strategy for the maintenance of the health and well being of our senior population. This strategy should include institutional and community-based health care services, as well as comprehensive complementary social support services.

### 4. Monitor the growth and development of managed care and its impact on the delivery and utilization of personal health care services.

The organization and financing of health care services is now determined by the principles of managed care. In this environment it is the responsibility of public health to ensure that the objectives pursued by managed care organizations will, at the very least, not result in harm to the public, or, more importantly, yield improvements in the health of the public. Managed care is a system in which health providers typically assume some financial risk for the services they deliver in order to be able to access a population of insured individuals. This mechanism encourages containing costs and better patient management on the one hand, but can lead providers to underuse services on the other. One example of the tendency to reduce the services provided to patients was the practice of hospitals and doctors discharging mothers and newborns within one day of a normal delivery, the "drive through delivery" issue. Public dissatisfaction with the practice eventually resulted in legislatively mandated two day stays for normal deliveries, unless the mother and her doctor together decide on an early discharge.

In another example it was reported that capitated MCOs demonstrated a decline in service utilization when compared to fee-for-service health plans, however a majority of capitated MCO enrollees

over age 64 reported a decline in health compared to a quarter of those enrolled in fee-for-service plans.<sup>14</sup> This indicated that the reduction in health services had a real and perceived effect on the health of plan members.

5. Expand access to affordable health insurance and primary and preventive health care services to the uninsured and underinsured.

Poor access to timely health care services, especially preventive and primary care services, is a consequence of being un- or underinsured.<sup>15</sup> People without adequate health insurance have worse health status and higher mortality rates than adequately insured people because they seek care later, at more advanced stages of disease.<sup>16</sup> Children without health insurance are less likely to be appropriately immunized, to get care for injuries, to be regularly treated for chronic conditions, or to get dental care.<sup>17,18</sup> Since 1992, estimates of the uninsured in Connecticut have fluctuated between 10% and 12%.

Access can be a problem for fully insured populations as well. In an analysis of health conditions for which hospitalization may have been avoided with appropriate use of ambulatory care, DPH found that Medicaid enrollees were hospitalized at rates between two and ten times greater than patients insured by private insurers.<sup>19</sup> This suggests that Medicaid enrollees may have problems accessing ambulatory care services. Another analysis showed that only 24% of Medicaid-enrolled children in Connecticut were screened for dental services during FFY 1996, and the rate of dental decay for 6-8 year old Medicaid enrollees was 21% higher than the national average.<sup>20</sup>

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<sup>14</sup> Ware JE, Bayliss MS, Rogers WH, Kosinski M, Tarlov AR. Differences in 4-year outcomes for elderly and poor, chronically ill patients treated in HMO and fee-for-service systems. *JAMA* 1996; 276(13): 1039-47.

<sup>15</sup> See Chapter 2, "Consequences of Lacking Health Insurance."

<sup>16</sup> Franks P., Clancy CM, Gold MR. Health insurance and mortality. *Journal of the American Medical Association* 1993 vol. 270, pp.737-741.

<sup>17</sup> Blumberg LJ, Liska DW. The uninsured in the United States: a status report. 1996 April.

<sup>18</sup> Families USA. Unmet needs: the large differences in health care between uninsured and insured children. Analysis of the 1994 National Health Interview Survey. Washington, D.C.: 1997 June.

<sup>19</sup> See Chapter 4, "Ambulatory-care-sensitive Hospitalizations."

<sup>20</sup> Lee MA. Children's Health Council. Personal communication. August 28, 1997. Based on data obtained from the HCFA-416 Report for FFY 1996.

## ESSENTIAL PUBLIC HEALTH PROGRAMS

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Much of the improvement in the health of Connecticut residents over the past century is the result of successful public health, social, and economic programs. Reduction or discontinuation of these essential programs would almost certainly lead to an increase in morbidity and mortality. The priorities for essential public health programs emphasize infectious disease control, environmental assurance, and quality assurance for health providers and services.

### 1. INFECTIOUS DISEASE CONTROL

#### 1.1 Monitoring and control of all infectious diseases

#### 1.2 Investigation of outbreaks of infectious diseases and food poisoning

Reportable infectious diseases and treatments are monitored for surveillance purposes. Monitoring alerts the public health community to emerging changes in infectious diseases. For example, the emergence of drug-resistant tuberculosis in urban areas, which primarily affects minorities, results from the gradual breakdown of the public health infrastructure which was organized to defend against it. The prevention of tuberculosis outbreaks requires site-specific intervention programs. The bacterium *Streptococcus pneumoniae* causes a wide range of infections, including pneumonia, otitis media, meningitis, and bloodstream infections. They are of public health concern because they occur in clusters in crowded settings, and antibiotic-resistant strains have recently emerged. Ingestion of food products contaminated with pathogenic infectious agents can lead to a wide range of health consequences, including death.

New tools are emerging that prevent infectious diseases, including vaccines against varicella, pneumococcal disease, hepatitis A, rotavirus gastroenteritis, Lyme disease, and anti-viral agents to prevent HIV transmission. There are also national prevention initiatives for foodborne illnesses and Group B streptococcal disease.

#### 1.3 Immunization programs

The prevention of infectious diseases is assured through appropriate immunization programs. For example, vaccination completion rates for Connecticut children for the primary measles immunization series, required by age 2, are the highest in the nation. However, vaccination levels are low among urban residents, among children who have delayed initiation of vaccination, among children who have moved into an area after birth, and among those whose parents have a history of poor utilization or poor access to health care.

### 2. HEALTH PROVIDER QUALITY ASSURANCE

#### 2.1 Setting and enforcing standards for professional provider qualifications and provider and facility quality assurance

DPH is responsible for regulating providers such as health facilities and health professionals to assure that competent and capable health care and environmental service providers are available to the entire population. This is accomplished by licensing the professions, health care and day care facilities, and environmental services.

### 3. ENVIRONMENTAL ASSURANCE

### 3.1 Protection of food and water through the setting and enforcing of quality standards

There has been no incidence of waterborne disease in Connecticut during the 1990's. The high quality of drinking water is maintained through a variety of regulatory and coordinated planning activities. These activities must continue to assure a safe drinking water supply.

### 3.2 Lead abatement in housing and testing of children for blood lead levels

Because the prevalence rate of children with elevated blood lead levels from Connecticut's major urban areas are between three and four times higher than estimates of the national average,<sup>21</sup> it is important to maintain assessment activities include screening programs, and prevention measures include education programs.

## 4. HEALTH SERVICES ASSURANCE

### 4.1 Setting and enforcing standards for preventive health care

Preventive services for the early detection of disease are associated with substantial reductions in morbidity and mortality.<sup>22</sup> Public health agencies are responsible for setting and enforcing standards for monitoring prevention programs. Examples of preventive efforts include immunization programs and smoking prohibition policies in health care facilities.

### 4.2 Assuring the provision of health care services to underserved populations

A traditional responsibility of public health is to assure access to a minimum set of quality health care services for the population. DPH recognizes that access to health care affects the overall health status of the population and must be maintained as a public health priority.

### 4.3 Family nutrition programs

Family nutrition programs are a priority because they can prevent deterioration of children's health. Proper child nutrition is directly related to improved school performance, enhanced growth and development, and a reduction in obesity. Nutrition is also a contributing factor in low birthweight babies, birth defects, osteoporosis, and diabetes. Optimal nutrition can prevent disease, reduce risk of illness, enhance recovery and reduce complications, and promote general health and well being.<sup>23</sup>

The public health infrastructure has assumed the responsibility of providing nutrition programs and food supplements to those who are medically in need or who cannot afford a nutritionally complete diet.

## SUMMARY AND NEXT STEPS

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As the year 2000 approaches, a course must be set for public health that will lead it through the next decade. Based on the issues identified in the *Assessment*, and the priorities identified in this chapter, Connecticut needs to focus its resources now on those areas of activity that will have the most significant impact on the health of the state.

Beyond our commitment to adequately maintain essential public health programs, DPH feels that its policy and program development should emphasize those health conditions that are the most pervasive among our residents: cardiovascular and cerebrovascular disease, cancer, unintentional injuries, and the

<sup>21</sup> See Chapter 3, "Blood Lead Levels in Children."

<sup>22</sup> U.S. Preventive Services Task Force. *Guide to Clinical Preventive Services*, 2nd ed. Baltimore: Williams & Wilkins, 1996.

<sup>23</sup> American Dietetic Association. Cost effectiveness of medical nutrition therapy. *Journal of the American Dietetic Association*. 1995 January.

modifiable risk factors associated with them: tobacco use, diet and cholesterol, physical inactivity, and hypertension.

The priorities described in this chapter can be condensed into four main areas for public health action in the next biennium:

- ◇ Cardiovascular disease
- ◇ Cancer
- ◇ Injuries
- ◇ Surveillance and monitoring

DPH is now in the process of allocating resources to these key areas. Plans and programs are being designed to increase prevention efforts in these areas. For example, DPH is coordinating a cancer control plan and has prepared a tobacco use prevention and cessation plan. Injury prevention efforts include the child passenger safety program, fall prevention and medication safety program for older adults, and service provider training. DPH is working to identify and reduce health disparities in Connecticut's racial and ethnic groups, such as the preventive health program for cardiovascular disease targeted to high-risk populations.

Within the four focus areas, programs will monitor access to preventive and clinical services, assess the quality of services provided, and evaluate people's health outcomes. For example, DPH is improving injury surveillance by linking medical outcomes data to police vehicle crash reports. As part of its surveillance efforts, DPH is designing ways to improve its risk factor assessments and to integrate them into existing program planning and evaluation efforts. To enhance the Behavioral Risk Factor Surveillance System, DPH is developing methods to obtain information on rural and urban populations.

To maintain currency in its planning and priority-setting efforts, DPH will reassess the health status and health services of the state every two years. This biennial planning process is essential for setting meaningful policy and program direction for the Connecticut DPH in the future.

# APPENDIX A

## STATE HEALTH PLANNING LEGISLATION

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### STATE OF CONNECTICUT

**Sec. 19a-7a.** The General Assembly declares that it shall be the goal of the state to assure the availability of appropriate health care to all Connecticut residents, regardless of their ability to pay. In achieving this goal, the state shall work to create the means to assure access to a single standard of care for all residents of Connecticut, on an equitable financing basis and with effective cost controls. In meeting the objective of such access, the state shall ensure that mechanisms are adopted to assure that care is provided in a cost effective and efficient manner.

### CONNECTICUT DEPARTMENT OF PUBLIC HEALTH

**Sec. 19a-7.** The Department of Public Health shall be the lead agency for public health planning and shall assist communities in the development of collaborative health planning activities which address public health issues on a regional basis or which respond to public health needs having state-wide significance. The department shall prepare a multiyear state health plan which will provide an assessment of the health of Connecticut's population and the availability of health facilities. The plan shall include: (1) Policy recommendations regarding allocation of resources; (2) public health priorities; (3) quantitative goals and objectives with respect to the appropriate supply, distribution and organization of public health resources; and (4) evaluation of the implications of new technology for the organization, delivery and equitable distribution of services. In the development of the plan the department shall consider the recommendations of any advisory bodies which may be established by the commissioner.

### OFFICE OF HEALTH CARE ACCESS

**Sec. 19a-613.** (a) The Office of Health Care Access shall employ the most effective and practical means necessary to fulfill the purposes of 19a-610 to 19a-622, including but not limited to, performing the duties and functions as enumerated in subsection (b) of this section. (b) The Office shall: (1) Authorize and oversee the collection of data required to carry out the provisions of sections 19a-610 to 19a-622 and coordinate with the Connecticut Health Care Data Institute on issues relating to the collection and analysis of health care data described in sections 19a-619 to 19a-622, inclusive; (2) oversee and coordinate health system planning for the state; (3) monitor health care costs; (4) continue the functions and duties of chapter 368z; and (5) implement and oversee health care reform as enacted by the General Assembly.

**Sec. 19a-634.** (a) The Office of Health Care Access, in consultation with the Department of Public Health, shall carry out a continuing state-wide health care facility utilization study, including a study of existing health care delivery systems; recommend improvements in health care procedures to the health care facilities and institutions; recommend to the commissioner legislation in the area of health care programs; and report annually to the Governor and the General Assembly its findings, recommendations and proposals, as of January first, for improving efficiency, lowering health care costs, coordinating use of facilities and services and expanding the availability of health care throughout the state.

(b) The office shall establish and maintain a state-wide health care facilities plan, including provisions for an ongoing evaluation of the facility utilization study conducted pursuant to subsection (a) of this section to: (1) Determine the availability of acute care, long term care and home health care services in private and public institutional and community-based facilities providing diagnostic or therapeutic services for residents of this state; (2) determine the scope of such services; and (3) anticipate future needs for such facilities and services. The health care facilities plan shall be considered part of the state health plan for purposes of office deliberations pursuant to section 19a-637.

**Sec. 19a-637.** (a) In any of its deliberations involving a proposal, request or submission regarding rates or services by a health care facility or institution, the office shall take into consideration and make written findings concerning each of the following principles and guidelines: The relationship of the proposal, request or submission to the state health plan; the relationship of the proposal, request or submission to the applicant's long-range plan; the financial feasibility of the proposal, request or submission and its impact on the applicant's rates and financial condition; the impact of such proposal, request or submission on the interests of consumers of health care services and the payers for such services; the contribution of such proposal, request or submission to the quality, accessibility and cost-effectiveness of health care delivery in the region; whether there is a clear public need for any proposal or request; whether the health care facility or institution is competent to provide efficient and adequate service to the public in that such health care facility or institution is technically, financially and managerial expert and efficient; that rates be sufficient to allow the health care facility or institution to cover its reasonable capital and operating costs. Whenever the granting, modification or denial of a request is inconsistent with the state health plan, a written explanation of the reasons for the inconsistency shall be included in the decision.

## CONNECTICUT DEPARTMENT OF MENTAL HEALTH & ADDICTION SERVICES

**Sec. 17a-451.** (h) [The Commissioner] shall develop a state-wide plan for the development of mental health services which identifies needs and outlines procedures for meeting these needs. (j) He shall be responsible for developing and implementing the Connecticut comprehensive plan for prevention, treatment and reduction of alcohol and drug abuse problems to be known as the state substance abuse plan. The plan shall include state-wide, long term planning goals and objectives, and annual revisions of objectives. In the development of the substance abuse plan the commissioner shall solicit and consider the recommendations of the sub-regional planning and action councils established under section 17a-671. (See Appendix C)

## CONNECTICUT DEPARTMENT OF MENTAL RETARDATION

**Sec. 17a-211.** (a) In 1991, and every two years hereafter, the Department of Mental Retardation shall develop and review a five-year plan in accordance with this section. The plan shall: (1) Set priorities; (2) identify goals and objectives and the strategies to be employed to achieve them; (3) define the criteria to be used in evaluating whether the department is making progress toward the achievement of such goals and objectives; (4) identify changes in priorities, goals, objectives and strategies from the prior plan; (5) describe and document progress made in achieving the goals and objectives outlined in the prior plan; and (6) estimate the type and quantity of staff and client services that will be needed over the life of the plan.

## CONNECTICUT DEPARTMENT OF SOCIAL SERVICES

**Sec. 17b-26.** (a) The Department of Social Services shall act as the single state agency to coordinate, plan and publish annually the state social services plan for the implementation of social services block grants and community services block grants as required by federal law and regulation. Said department shall furnish copies of said plan to the joint standing committees of the General Assembly having cognizance of matters relating to appropriations, and the budgets of state agencies and human services, at least sixty days prior to publication, for their review and recommendations, and shall consult with and furnish to said committees any additional information on such plan which they may request.

## APPENDIX B

## CONNECTICUT HEALTH DEPARTMENTS AND DISTRICTS

**Table B - 1**  
**Local Health Departments and Districts by Municipality**

Municipality <sup>a</sup>	Health Department/District <sup>b</sup>
Andover	Town of Andover Health Department
✓ Ansonia	Naugatuck Valley Health District
✓ Ashford	Northeast District Dept. of Health
✓ Avon	Farmington Valley Health District
✓ Bantam (b)	Torrington Area Health District
✓ Barkhamsted	Farmington Valley Health District
✓ Beacon Falls	Naugatuck Valley Health District
✓ Berlin	Berlin Health Department
Bethany	Town of Bethany Health Department
✓ Bethel	Bethel Health Department
✓ Bethlehem	Torrington Area Health District
✓ Bloomfield	West Hartford-Bloomfield Health District
✓ Bolton	Eastern Highlands Health District
Bozrah	Town of Bozrah Health Department
✓ Branford	East Shore Health District
✓ Bridgeport	Bridgeport Health Department
Bridgewater	Town of Bridgewater Health Dept.
✓ Bristol	Bristol-Burlington Health District
Brookfield	Town of Brookfield Health Dept.
✓ Brooklyn	Northeast District Dept. of Health
✓ Burlington	Bristol-Burlington Health District
Canaan	Town of Canaan Health Department
✓ Canterbury	Northeast District Dept. of Health
✓ Canton	Farmington Valley Health District
Chaplin	Town of Chaplin Health Department
✓ Cheshire	Chesprocott Health District
Chester	Town of Chester Health Department
Clinton	Town of Clinton Health Department
Colchester	Town of Colchester Health Dept.
✓ Colebrook	Farmington Valley Health District
Columbia	Town of Columbia Health Department
✓ Cornwall	Torrington Area Health District
✓ Coventry	Eastern Highlands Health District
Cromwell	Town of Cromwell Health Department
✓ Danbury	Danbury Health And Housing Dept.
✓ Danielson (b)	Northeast District Dept. of Health
Darien	Town of Darien Health Department
Deep River	Town of Deep River Health Dept.
✓ Derby	Naugatuck Valley Health District
Durham	Town of Durham Health Department
✓ East Granby	Farmington Valley Health District
East Haddam	Town of East Haddam Health Dept.
✓ East Hampton	East Hampton Health Department

AN ASSESSMENT OF HEALTH STATUS AND HEALTH SERVICES

Municipality <sup>a</sup>	Health Department/District <sup>b</sup>
✓ East Hartford	East Hartford Health Department
✓ East Haven	East Shore Health District
East Lyme	Town of East Lyme Health Dept.
✓ East Windsor	North Central Health District
✓ Eastford	Northeast District Dept. of Health
Easton	Town of Easton Health Department
✓ Ellington	North Central Health District
✓ Enfield	North Central Health District
Essex	Town of Essex Health Department
✓ Fairfield	Fairfield Health Department
✓ Farmington	Farmington Valley Health District
Fenwick (b)	Town of Old Saybrook Health Dept.
Franklin	Town of Franklin Health Department
✓ Glastonbury	Glastonbury Health Department
✓ Goshen	Torrington Area Health District
✓ Granby	Farmington Valley Health District
✓ Greenwich	Greenwich Health Department
Griswold	Town of Griswold Health Department
✓ Groton city & town	Ledge Light Health District
Guilford	Town of Guilford Health Department
Haddam	Town of Haddam Health Department
✓ Hamden	Quinnipiack Valley Health District
✓ Hampton	Northeast District Dept. of Health
✓ Hartford	Hartford Health Department
✓ Hartland	Farmington Valley Health District
✓ Harwinton	Torrington Area Health District
Hebron	Town of Hebron Health Department
Jewett City (b)	Town of Griswold Health Department
✓ Kent	Torrington Area Health District
✓ Killingly	Northeast District Dept. of Health
Killingworth	Town of Killingworth Health Dept.
Lebanon	Town of Lebanon Health Department
Ledyard	Town of Ledyard Health Department
Lisbon	Town of Lisbon Health Department
✓ Litchfield	Torrington Area Health District
✓ Litchfield (b)	Torrington Area Health District
Lyme	Town of Lyme Health Department
Madison	Madison Health Department
✓ Manchester	Manchester Health Department
✓ Mansfield	Eastern Highlands Health District
Marlborough	Town of Marlborough Health Dept.
✓ Meriden	Meriden Dept. of Health & Human Services
Middlebury	Town of Middlebury Health Dept.
Middlefield	Town of Middlefield Health Dept.
✓ Middletown	Middletown Health Department
✓ Milford	Milford Health Department
Monroe	Town of Monroe Health Department
✓ Montville	Uncas Health District
✓ Morris	Torrington Area Health District
✓ Naugatuck	Naugatuck Valley Health District
✓ New Britain	New Britain Health Department
New Canaan	Town of New Canaan Health Department
✓ New Fairfield	New Fairfield Health Department
✓ New Hartford	Farmington Valley Health District
✓ New Haven	New Haven Health Department
✓ New London	New London Health Department

Municipality <sup>a</sup>	Health Department/District <sup>b</sup>
✓ New Milford	New Milford Health Department
Newington	Town of Newington Health Department
✓ Newtown	Newtown Health District
✓ Newtown (b)	Newtown Health District
✓ Norfolk	Torrington Area Health District
✓ North Branford	East Shore Health District
North Canaan	Town of North Canaan Health Dept.
✓ North Haven	Quinnipiack Valley Health District
North Stonington	Town of North Stonington Health Dept.
✓ Norwalk	Norwalk Health Department
✓ Norwich	Uncas Health District
Old Lyme	Town of Old Lyme Health Department
Old Saybrook	Town of Old Saybrook Health Dept.
Orange	Town of Orange Health Department
✓ Oxford	Pomperaug Health District
✓ Plainfield	Northeast District Dept. of Health
Plainville	Town of Plainville Health Department
Plymouth	Town of Plymouth Health Department
✓ Pomfret	Northeast District Dept. of Health
Portland	Town of Portland Health Department
Preston	Town of Preston Health Department
✓ Prospect	Chesprocott Health District
✓ Putnam	Northeast District Dept. of Health
Redding	Town of Redding Health Department
Ridgefield	Town of Ridgefield Health Department
✓ Rocky Hill	Rocky Hill-Wethersfield Health District
Roxbury	Town of Roxbury Health Department
Salem	Town of Salem Health Department
✓ Salisbury	Torrington Area Health District
Scotland	Town of Scotland Health Department
✓ Seymour	Naugatuck Valley Health District
Sharon	Town of Sharon Health Department
✓ Shelton	Naugatuck Valley Health District
Sherman	Town of Sherman Health Department
✓ Simsbury	Farmington Valley Health District
Somers	Town of Somers Health Department
South Windsor	Town of South Windsor Health Dept.
✓ Southbury	Pomperaug Health District
Southington	Town of Southington Health Dept.
Sprague	Town of Sprague Health Department
✓ Stafford	Stafford Health District
✓ Stamford	Stamford Health Department
✓ Sterling	Northeast District Dept. of Health
Stonington	Town of Stonington Health Dept.
Stonington (b)	Town of Stonington Health Dept.
✓ Stratford	Town of Stratford Health Department
✓ Suffield	North Central Health District
✓ Thomaston	Torrington Area Health District
✓ Thompson	Northeast District Dept. of Health
Tolland	Town of Tolland Health Department
✓ Torrington	Torrington Area Health District
Trumbull	Town of Trumbull Health Department
✓ Union	Stafford Health District
✓ Vernon	North Central Health District
Voluntown	Town of Voluntown Health Department
Wallingford	Town of Wallingford Health Dept.

AN ASSESSMENT OF HEALTH STATUS AND HEALTH SERVICES

Municipality <sup>a</sup>	Health Department/District <sup>b</sup>
✓ Warren	Torrington Area Health District
Washington	Town of Washington Health Department
✓ Waterbury	Waterbury Health Department
Waterford	Town of Waterford Health Department
✓ Watertown	Torrington Area Health District
✓ West Hartford	West Hartford-Bloomfield Health District
✓ West Haven	West Haven Health Department
Westbrook	Town of Westbrook Health Department
✓ Weston	Weston/Westport Health District
✓ Westport	Weston/Westport Health District
✓ Wethersfield	Rocky Hill-Wethersfield Health District
Willington	Town of Willington Health Dept.
✓ Wilton	Wilton Health Department
✓ Winchester	Torrington Area Health District
✓ Windham	North Central Health District
✓ Windsor	Windsor Health Department
✓ Windsor Locks	North Central Health District
✓ Wolcott	Chesprocott Health District
✓ Woodbridge	Quinnipiack Valley Health District
✓ Woodbury	Pomperaug Health District
Woodmont (b)	Milford Health Department
✓ Woodstock	Northeast District Dept. of Health

(b) Denotes a borough in Connecticut.

✓ Denotes a full-time health department or district.

<sup>a</sup> Connecticut municipalities include 170 cities and towns, and 8 boroughs

<sup>b</sup> Connecticut Department of Public Health, Local Health Administration. *Directory, Local Directors of Health in Connecticut*. Hartford:1997.

**Table B - 2**  
**Regional Health Districts and Member Municipalities**  
**Connecticut, 7/1/97**

Health District	Municipality <sup>1</sup>
Bristol-Burlington Health District	Bristol, Burlington
Chesprocott Health District	Cheshire, Prospect, Wolcott
East Shore Health District	Branford, East Haven, North Branford
Eastern Highlands Health District	Bolton, Coventry, Mansfield
Farmington Valley Health District	Avon, Barkhamsted, Canton, Colebrook, East Granby, Farmington, Granby, Hartland, New Hartford, Simsbury
Ledge Light Health District	City of Groton, Town of Groton
Naugatuck Valley Health District	Ansonia, Beacon Falls, Derby, Naugatuck, Seymour, Shelton
Newtown Health District	Newtown, Newtown (b)
North Central Health District	East Windsor, Ellington, Enfield, Suffield, Vernon, Windham, Windsor Locks
Northeast District Dept. Of Health	Ashford, Brooklyn, Canterbury, Danielson (b), Eastford, Hampton, Killingly, Plainfield, Pomfret, Putnam, Sterling, Thompson, Woodstock
Pomperaug Health District	Oxford, Southbury , Woodbury
Quinnipiack Valley Health District	Hamden, North Haven, Woodbridge
Rocky Hill-Wethersfield Health District	Rocky Hill, Wethersfield
Stafford Health District	Stafford, Union
Torrington Area Health District	Bantam (b), Bethlehem, Cornwall, Goshen, Harwinton, Kent, Litchfield, Litchfield (b), Morris, Norfolk, Salisbury, Thomaston, Torrington, Warren, Watertown, Winchester
Uncas Health District	Montville, Norwich
West Hartford-Bloomfield Health District	Bloomfield, West Hartford
Weston/Westport Health District	Weston, Westport

<sup>1</sup> Municipalities include cities, towns, and boroughs.

## APPENDIX C

### SUBSTANCE ABUSE AND MENTAL HEALTH

#### NEEDS ASSESSMENTS

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##### SUBSTANCE ABUSE

Since 1995, the Department of Mental Health and Addiction Services (DMHAS) has been involved in a number of federally funded initiatives focused on measuring the need for substance abuse prevention and treatment services. DMHAS has worked collaboratively with its Academic Partnership, the University of Connecticut Health Center (UCHC) and Yale University, to conduct prevention and treatment research as it applies to the identification, planning and delivery of cost-effective services to Connecticut's residents. The studies described below have benefited policy-makers, program planners and service providers as research findings are translated into applied solutions.

##### Prevention Needs Assessment: Alcohol and Other Drugs

The Prevention Needs Assessment, awarded to the DMHAS by the federal Center for Substance Abuse Prevention, consists of a family of studies that includes: 1) a School Survey, 2) a Community Resource Assessment, and 3) a Social Indicator Model. These studies will provide information about conditions in the State known to be associated with substance abuse and the related activities that place communities at risk for such problems. The following is a brief description of each study.

##### *Adult Prevention Needs Assessment*

Administered as part of the Adult Household Survey (see below – Treatment Needs Assessment), a risk factor module was included in the screening interview instrument. Using this brief questionnaire enabled researchers to assess the prevalence of substance abuse risk factors and to investigate the social and demographic characteristics associated with substance use in Connecticut's adult population.

##### *School Survey*

Building upon similar surveys administered in 1989 and 1995, UCHC conducted a representative sample of approximately 15,000 students in grades 5 through 12 to measure youth use of alcohol, tobacco and other drugs (ATOD). New to the 1997/98 school survey was the inclusion of "risk" and "protective" measures designed to provide a better understanding of which factors were most likely to lead to alcohol or drug involvement or conversely, those that are likely to reduce the risk of individuals misusing ATOD. In addition, information was collected on adolescents' knowledge, perceptions and use of available prevention programs.

##### *Community Resources Assessment*

Combined with the School Survey, the Community Assessment Survey will measure the availability of prevention services and the unmet need within a community. This leading-edge study, conducted by the

UCHC, will pilot test a series of questionnaires which focus on the delivery of prevention services. Provider information to be collected from both traditional and non-traditional prevention programs includes: 1) description of services provided, 2) number of clients served, 3) service capacity, 4) funding sources and proportion of agency budget for prevention services, 5) risk and protective factors addressed by the program, 6) referrals and linkages with other resources, and 7) perceived prevention needs. By this process, DMHAS will begin to match prevention needs (School Survey) to existing resources (Community Resource Assessment) to identify gaps in services, improve coordination of prevention services and enhance accountability of prevention delivery systems.

### *Social Indicators Model*

Using risk and protective factor theory, social indicator data for all 169 towns were collected for 1992, 1994 and 1996. These data are being analyzed with respect to four domains: the individual and peer, the family, the school and the community. Analysis is being conducted to identify statewide and regional patterns and trends in ATOD-related health status. When fully completed, this study will establish a method: 1) to monitor the conditions within the State that are known to be associated with ATOD-related problems, 2) to predict where in the State future ATOD problems are likely to arise, and 3) to inform program planners of areas requiring services.

Final reports detailing the complete findings of the four Prevention Needs Assessment studies will be available in spring 1999.

### Treatment Needs Assessment: Alcohol and Other Drugs

In 1995 and again in 1997, DMHAS won competitive awards from the federal Center for Substance Abuse Treatment (CSAT) to conduct statewide assessments to determine the need for treatment services in Connecticut. Both assessments contained a “family of studies” designed to provide a comprehensive approach to understanding the prevalence of alcohol and other drug use, abuse and dependence. Reports from the 1995 assessment are currently available while the 1997 assessment is in final stages of development. Findings from the 1995 “family of studies” have been widely disseminated and have formed the basis for policy and program initiatives throughout the State. Below is a brief description of each needs assessment process.

#### 1995 Family of Studies

##### *School Survey*

In 1995, UCHC conducted for DMHAS a school survey of 7th to 12th graders in public schools in Connecticut as a follow-up to the 1989 school survey. Major objectives included: 1) to estimate the prevalence of ATOD use in Connecticut’s school population as well as problems associated with substance use; 2) to examine changing trends in adolescent substance abuse since the 1989 school survey; 3) to identify social and demographic characteristics of adolescents with ATOD abuse; and 4) to assist State and regional planning efforts for treatment and prevention services. Results of the survey were published in 1996 in a report entitled: *Adolescent Substance Abuse Treatment Needs Assessment: The 1995 Adolescent Alcohol and Drug Use School Survey*. Several key findings from that study include: a significant rise in the use of marijuana and inhalants especially for 7<sup>th</sup> and 8<sup>th</sup> graders, and a decrease of one full year in the age of first use for alcohol, marijuana and inhalants for junior high school students since the 1989 survey.

##### *Youth at Risk Survey*

In order to fully assess the prevalence of AOD use and the need for treatment among adolescents in the State, the University of Connecticut Health Center conducted, for DMHAS and the Department of Children and Families, the Youth At Risk (YAR) Survey. This study targeted those youth missed in the 1995

School Survey and included chronic truants and dropouts, alternative school students and committed juveniles. The objectives of this study included: a) to determine the prevalence of alcohol and other drug use among at-risk adolescents not in regular schools; b) to provide more accurate estimates of prevalence of use among the State's school-age population by integrating data from youth-at-risk and in-school data; c) to estimate the need for intervention and treatment among this population; and d) to describe the social, vocational, legal and psychological problems associated with these youths' substance abuse. Findings from the YAR study provided a unique insight to the differences between these two populations regarding substance use and abuse and the need for treatment. Particularly, 52% of committed juveniles, 25% of alternative school students and 18% of dropouts are determined to be in need of treatment as opposed to 5% of high school students. In addition to their substance abuse, the out-of-school population exhibits high levels of family, intrapersonal and environmental risk factors requiring an integrated and coordinated approach to their social and substance abuse needs.

#### *Substance Abuse Need for Treatment among Arrestees (SANTA)*

As part of the "family of studies", designed to complement the Adult Household Survey, Yale University's School of Medicine conducted for DMHAS a survey of the criminal justice population. This study of recent arrestees had two objectives: first, to determine the prevalence of alcohol and other drug use among samples of arrestees in Connecticut; and second, to estimate the need for substance abuse treatment within this population. The Substance Abuse Need for Treatment among Arrestees (SANTA) survey for adult arrestees was conducted between August 1995 and February 1996 at the Hartford and New Haven detention centers. A total of 478 adults were interviewed at the time of their arrest to assess substance use patterns and social, family, vocational and psychiatric issues. Findings from the SANTA study indicated that the rate of substance dependence was extraordinarily higher for recent arrestees than in the general population. Focusing on current dependence, 57.2% of male and 60.8% of female arrestees are dependent on any substance compared to 12.9% of men and 4.3% of women in the general population.

#### *Adult Household Survey*

The Adult Household Survey (ADH) was a collaborative effort of researchers at the University of Connecticut Health Center and the Institute for Social Inquiry (ISI) at the Storrs campus and conducted for DMHAS. Objectives for this study were: to determine the prevalence of alcohol and other drug use in the adult population for the state and regional planning areas; to estimate the prevalence of substance use disorders in Connecticut's adult population, and to estimate the need and demand for substance abuse treatment at the State and regional levels. The survey was conducted between March 1995 and March 1996 and contained two components: 1) a screening interview which collected information for all respondents, and 2) a diagnostic interview for respondents who met specific screening criteria.

Major findings from the AHS regarding alcohol and other drug (AOD) rates include the following:

- Alcohol continues to be the most widely used substance with 95% of adults having ever used and 59% currently using;
- Marijuana is the second most commonly reported substance with 32% of Connecticut adults reporting lifetime use and 3% reporting use in the past 30 days;
- Cocaine lifetime use is approximately 9% while less than 1% report current use;
- Other substances such as hallucinogens, stimulants and sedatives have low lifetime rates, at 6%, 6% and 4% respectively, and current use rates under 1%; and
- Heroin had the lowest lifetime use at 1.8% and a current use rate of less than 0.1%.

The AHS found that the prevalence of diagnosable and treatable psychiatric and medical conditions (abuse and dependence) associated with substance use varies in the following ways:

- Overall 8.3% of those populations included in the AHS meet the criteria for current abuse and dependence of any substance (alcohol or any illicit drug).
- Alcohol abuse and dependence accounts for the greatest percentage (7.8%) of those currently needing treatment in the general population.
- Marijuana is next with 1.2%, followed by cocaine (0.6%) and heroin or opiates (0.3%).

### *Social Indicators Model*

The Social Indicator study focused on the social, economic and demographic conditions of the State that were thought to be associated with AOD-related problems. Study objectives included: to evaluate the availability of the indicators; to analyze the reliability, validity and generalizability of these indicators, to establish a database that identifies conditions within the State that reflect increases or decreases in the need for treatment; to assess the efficacy of these indicators as predictors of treatment utilization; to inform planners and policy makers within DMHAS and other State departments of problem indicators that should be considered in the development of treatment responses.

## TREATMENT NEEDS ASSESSMENT II

In October 1997, DMHAS received a federal award from the Center for Substance Abuse Treatment (CSAT) to conduct a second “family of studies” designed to build upon the methodologies and findings of Connecticut’s first substance abuse treatment needs assessment. The major objectives of the proposed study are: 1) to enhance previous data collection efforts, 2) to develop new methodologies to estimate treatment demand, 3) to provide new prevalence data from critical populations, and 4) to integrate the prevalence and demand estimates from the first treatment needs assessment with those obtained from special adult populations targeted in the second study. The three complementary studies include:

### Study of Temporary Assistance to Needy Families (TANF) and General Assistance (GA) Populations

The main goals of the study are: 1) to provide the State with reliable estimates of need and demand for alcohol and drug treatment among adult and adolescent TANF enrollees and GA recipients, 2) to evaluate access, availability and effectiveness of substance abuse treatment services for TANF enrollees and GA recipients, and 3) to identify barriers to substance abuse treatment and service gaps for this population. The study will also provide data regarding medical (e.g., risk of HIV and other infectious illness) and psychiatric comorbidity (including depression, anxiety and psychotic disorders) associated with alcohol and other drug use, abuse and dependence in this population.

### Social Indicator Analysis

This research project builds upon the Social Indicators Model from the first Treatment Needs Assessment which demonstrated that substance abuse treatment need in Connecticut varies according to region, community-type, and population characteristics. Multivariate analyses of the data to date have examined the interrelationships among the indicators and showed that indicators of poverty, urbanicity, crime and substance abuse “help-calls” contributed independently to a predictive model of substance abuse treatment demand.

### Integration of Surveys, Social Indicators, and Treatment Utilization Findings

The purpose of the above studies is to enable Connecticut to estimate the prevalence of substance use and abuse, and to develop a demand model for prevention and treatment services that can guide the process of resource allocation. The aim to provide Connecticut's citizens with the most cost effective substance abuse prevention and treatment services available requires that the following be identified: 1) the number of people in need of services be quantified (prevalence estimates), 2) the number of those in need

who would actually use services be determined (demand estimates); and 3) the number and type of services to be utilized, planned and provided (resource allocation). To this end, information from the Treatment Needs Assessment I and II studies will be integrated to derive a comprehensive demand and resource allocation model.

## MENTAL HEALTH

Over the course of the past several years, the federal Center for Mental Health Services (CMHS) in collaboration with a group of technical experts has developed a model for estimating the number of individuals with mental illness. Data from two national studies, the National Comorbidity Survey (NCS) and the Epidemiological Catchment Area (ECA) Study, were used to determine the 12-month prevalence for those with a mental illness. Applying this model, DMHAS extrapolated the number of adults within the State having a mental illness as follows:

- of Connecticut's adult population, 5.1% has a serious mental illness (SMI)
- approximately half of those with SMI or 2.6% of the total adult population have a severe and prolonged mental illness (SPMI)

An estimate of the prevalence of serious and prolonged mental (SPMI) illness used lifetime prevalence rates for schizophrenia, bipolar disorder and serious depression. The prevalence rates for these diagnostic groups were derived from the Epidemiological Catchment Area Study pooled rates for the six sites (one of which was New Haven, Connecticut). To each of these rates, a fixed value was applied representing DMHAS' estimate of the percentage of persons within each diagnostic group who have been seriously disabled by mental illness for a prolonged period of time. DMHAS estimate that 98% of all persons with schizophrenia, 50% of persons with bipolar disorder and 10% of persons with serious depression are reasonable estimates of "chronicity".

## APPENDIX D

## YEAR 2000 PLANNING EFFORTS

## HEALTHY PEOPLE 2000

The U.S. Department of Health and Human Services designated various agencies within the Public Health Service to coordinate activities to achieve the objectives in each of the *Healthy People 2000* priority areas.

**Table D - 1**  
***Healthy People 2000* Priority Areas and Lead Agencies<sup>2</sup>**

DHHS, PHS Lead Agencies	<i>Healthy People 2000</i> Priority Areas
Substance Abuse and Mental Health Services Administration	Alcohol and other drugs Mental health and mental disorders
Centers for Disease Control	Clinical preventive services Diabetes and chronic disabling conditions Educational and community-based programs Environmental health HIV infection Immunization and infectious diseases Occupational safety and health Oral health Sexually transmitted diseases Surveillance and data systems Tobacco Unintentional injuries Violent and abusive behavior
Food and Drug Administration	Food and drug safety
Health Resources and Services Administration	Educational and community-based programs Clinical preventive services Maternal and infant health
National Institutes of Health	Cancer Diabetes and chronic disabling conditions Environmental health Heart disease and stroke Mental health and mental disorders Nutrition Oral health
Office of Population Affairs	Family planning
President's Council on Physical Fitness and Sports	Physical activity and fitness

## CDC HEALTH STATUS INDICATORS

The DHHS Centers for Disease Control and Prevention (CDC) was delegated responsibility for the priority area concerning health surveillance and to develop supporting data systems. As part of this responsibility, CDC

<sup>2</sup> U.S. Dept of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention. *Healthy People 2000 Review 1997*. Washington: 1997, p. 216.

developed a set of 18 health status indicators<sup>3</sup> to track the general health status of the population for each indicator. The indicators, listed below, were chosen in an effort to facilitate national, state, and local efforts in tracking the *Healthy People 2000* objectives and to help communities assess the general health status of their population.

**Table D-2**  
**Health Status Indicators**

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Mortality
Total mortality
Lung cancer deaths
Motor vehicle crash deaths
Homicide
Cardiovascular disease
Breast cancer deaths
Suicides
Infant mortality
Work injury-related deaths
Disease Incidence
10. Acquired immunodeficiency syndrome (AIDS)
11. Syphilis
12. Tuberculosis
13. Measles
Risk Factors
14. Poor air quality, as measured by the proportion of people living in counties exceeding U.S. Environmental Agency standards for air quality during the previous year
15. Prenatal care, as measured by the percentage of mothers delivering live infants who did not receive prenatal care during the first trimester
16. Childhood poverty, as measured by the proportion of children less than 15 years of age living in families at or below the poverty level
17. Low birthweight-as measured by the percentage of live-born infants weighing less than 2,500 grams at birth
18. Births to adolescents (females aged 10-17 yrs.) as a percentage of total live births

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<sup>3</sup> U.S. Dept of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention. Health objectives for the nation. *Morbidity and Mortality Weekly Report* 1991; Vol. 40, No. 27:1-3.

## HEALTHY CONNECTICUT 2000

*Healthy People 2000*<sup>4</sup> and *Healthy Connecticut 2000 Baseline Assessment Report*<sup>5</sup> established priority areas for year 2000 objectives. The national priority area of Clinical Preventive Services was not covered in either the Connecticut 1992 or 1997 documents but may be included in future updates of the report. The 1997 revision covers two national priority areas that were not addressed in 1992: Educational/Community-based Programs, and Oral Health. The two national priority areas, Alcohol and Other Drugs, and Mental Health and Mental Disorders, are not addressed in DPH documents since these areas are under the jurisdiction of DMHAS.

**Table D-3**  
**Healthy People 2000 and Healthy Connecticut 2000 Priority Areas**

<i>Healthy People 2000</i> Priority Areas	<i>Healthy Connecticut 2000</i> Priority Areas	
	1992	1997 <sup>6</sup>
Health Promotion		
1/ Physical Activity and Fitness	✓ <sup>7</sup>	✓
2/ Nutrition	✓	✓
3/ Tobacco	✓	✓
4/ Alcohol and Other Drugs	-- <sup>8</sup>	--
5/ Family Planning	✓	✓
6/ Mental Health and Mental Disorders	--	--
7/ Violent and Abusive Behavior	✓	✓
8/ Educational / Community-Based Programs	--	✓
Health Protection		
9/ Unintentional Injuries	✓	✓
10/ Occupational Safety and Health	✓	✓
11/ Environmental Health	✓	✓
12/ Food and Drug Safety	✓	✓
13/ Oral Health	--	✓
Preventive Services		
14/ Maternal and Infant Health	✓	✓
15/ Heart Disease and Stroke	✓	✓
16/ Cancer	✓	✓
17/ Diabetes & Chronic Disabling Conditions	✓	✓
18/ HIV Infection	✓	✓
19/ Sexually Transmitted Diseases	✓	✓
20/ Immunization and Infectious Diseases	✓	✓
21/ Clinical Preventive Services	--	--
Surveillance and Data Systems		
22/ Surveillance and Data Systems	✓	✓

<sup>4</sup> U.S. Dept of Health and Human Services. *Healthy People 2000: National Health Promotion and Disease Prevention Objectives*, 1990.

<sup>5</sup> Connecticut Dept of Public Health. *Healthy Connecticut 2000 Baseline Assessment Report*. Hartford, CT. 1992:250pp.

<sup>6</sup> Connecticut Dept of Public Health. *Healthy Connecticut 2000 Baseline Assessment Report Replacements and Additions*. 1997.

<sup>7</sup> Indicates that the document contains objectives related to the priority area.

<sup>8</sup> Indicates that the priority area is not addressed in the document.

## APPENDIX E

## SELECTED HEALTHY COMMUNITY INITIATIVES

<b>Danbury Healthy 2000 (1994)</b>	
Area Served:	Greater Danbury
Participants:	Danbury Hospital, Danbury Visiting Nurse Association, Danbury Public Schools, Housatonic Valley Coalition Against Substance Abuse, AIDS Project Greater Danbury, Community Action Committee of Danbury, Danbury Department of Health.
Goals:	To increase the span of a healthy life, reduce health disparities, and increase access to preventive services.
Priorities:	<ul style="list-style-type: none"> <li>• Depression/suicide</li> <li>• HIV/AIDS</li> <li>• Immunizations</li> <li>• Substance abuse</li> <li>• Teen pregnancy</li> <li>• Violence</li> </ul>
Of Note:	Medical Town Meetings are free public forums held periodically to provide an opportunity to town discussion about health issues.
<b>Greater New Haven Partnership for a Healthy Community</b>	
Area Served:	New Haven, East Haven, West Haven, North Haven, Hamden, North Branford, Orange, Woodbridge, and Bethany
Participants:	Initiating Partners: Community Foundation, Fair Haven and Hill Health Community Centers, Saint Raphael Healthcare System and Yale-New Haven Hospital, New Haven Health Dept., United Way, Visions for a Greater New Haven, and Yale University School of Medicine - Department of EPH. Community Partnership: represents the diversity of the community - politically, racially, geographically, ethnically, and economically.
Goals:	To improve the health status of all residents in Greater New Haven; to gain a comprehensive understanding of the community's health status and potential; to marshal community resources to improve quality of life; to encourage people to take greater responsibility for their own health; and to promote wellness and improve access for all to basic and preventive health care.
Priorities:	<ul style="list-style-type: none"> <li>• Community needs assessment</li> <li>• Community outreach</li> </ul>
Of Note:	Aiming to create a model of collaboration for continuum of care.
<b>Healthy Connecticut Initiative - Regional Public Health Needs Assessment (1994)</b>	
Area Served:	Andover, Chaplin, Columbia, Coventry, Lebanon, Mansfield, Scotland, Sprague, and Windham representing over 71,000 residents.
Participants:	Andover, Chaplin, Columbia, Coventry, Lebanon, Mansfield, Scotland, Sprague, and Windham representatives and staff of The Healthy Connecticut Initiative.
Goals:	To improve access to local public health services by encouraging health policy decision-making at the community level to improve their quality of life.
Priorities:	<ul style="list-style-type: none"> <li>• Infectious diseases</li> <li>• Municipal and interagency coordination, collaboration, and cooperation</li> <li>• Regional health district to enhance efficiency and coordination of services</li> <li>• Substance abuse</li> <li>• Violence prevention</li> </ul>
Of Note:	Windham has since joined the North Central Health District but no formal action has taken place in the other communities. Discussions are continuing regarding consolidation and formation of a health district..
<b>Hartford Community Health Partnership (1995)</b>	
Area Served:	City of Hartford
Participants:	DPH, Hartford Health Department, Hartford Hospital and St. Francis Medical Center, Hispanic Health Council, United Way, CT Children's Medical Center, and community representatives.
Goals:	To collaboratively assess and improve the health status of the City's residents by mobilizing the different community sectors.

Priorities:	<ul style="list-style-type: none"> <li>• Collaboration and the role of the public health department</li> <li>• Health status data base</li> <li>• Economics</li> <li>• Health service delivery</li> <li>• Cultural diversity</li> </ul>
Of Note:	Utilizing the partnership approach as a strategy to plan, develop, implement, monitor, maintain, and evaluate a community's shared visions for the production of health.
<b>Healthy Living 2000 (1994)</b>	
Area Served:	Greenwich
Participants:	Greenwich Hospital, Greenwich Department of Health, media, community agencies, businesses, and residents.
Goals:	To help the people of Greenwich improve their health and to prevent major illnesses and chronic disease.
Priorities:	<ul style="list-style-type: none"> <li>• Alcohol abuse and misuse</li> <li>• High cholesterol</li> <li>• Hypertension</li> <li>• Life dissatisfaction</li> <li>• Overweight</li> <li>• Unintentional injuries and safety</li> </ul>
<b>Healthy Meriden 2000 (1994)</b>	
Area Served:	City of Meriden
Participants:	The Veterans Memorial Medical Center, the Meriden Health Department, and the Easter Seal Rehabilitation Center and stakeholders groups with 150+ volunteers.
Goals:	Measurably improve the health status of Meriden's citizens.
Priorities:	<ul style="list-style-type: none"> <li>• Chronic Disease &amp; Leading causes of death</li> <li>• Crime</li> <li>• Elderly Issues</li> <li>• Health care resource utilization</li> <li>• Substance abuse/tobacco</li> <li>• Teen pregnancy</li> </ul>
Of Note:	Published an inventory of community services as a collaborative effort among Healthy Meriden 2000, Meriden's Children First Initiative, and the Meriden Clergy Association.
<b>Hartford New London 2000 (1996)</b>	
Area Served:	City of New London
Participants:	New London Health Dept, Lawrence & Memorial Hospital, various churches, schools, neighborhood alliances.
Goals:	Improve the overall health of New London residents
Priorities:	<ul style="list-style-type: none"> <li>• Teenage pregnancy</li> <li>• Drug and alcohol dependence</li> <li>• Breast cancer</li> <li>• Communicable diseases</li> </ul>
Of Note:	Community survey and task forces in place to move forward with intervention strategies.

AN ASSESSMENT OF HEALTH STATUS AND HEALTH SERVICES

<b>Healthy Valley 2000 (1993)</b>	
Area Served:	Ansonia, Beacon Falls, Derby, Oxford, Seymour, and Shelton
Participants:	Griffin Hospital has taken the coordinating lead with a stakeholder group of 200 community members.
Goals:	To improve the health and quality of life of residents and the community by making the Valley a better place to live, work, raise a family, and enjoy life.
Priorities:	<ul style="list-style-type: none"> <li>• Substance Abuse</li> <li>• Economic Development</li> <li>• Crime</li> <li>• AIDS</li> <li>• Education</li> </ul>
Of Note:	Nationally recognized as a community model by The Presidents' Summit for America's Future.
<b>Neighborhood Health Improvement Partnership (1995)</b>	
Area Served:	Bridgeport's East Side and East End
Participants:	35 Bridgeport community agency representatives. A Coordinating Committee represents healthcare providers, consumers, legislators, policy makers, law enforcement officials, and major employers. Bridgeport Hospital is the primary health care provider.
Goals:	To improve the well-being of the neighborhood's residents through education of healthy choices and the promotion of living healthier and longer.
Priorities:	<ul style="list-style-type: none"> <li>• Access to health care</li> <li>• Economic development</li> <li>• Substance abuse and mental health</li> <li>• Teenage pregnancy and parenting</li> </ul>
Of Note:	A special liaison has been set up to assure parental involvement in the development of the final action plan. The NHIP emphasizes that parents are key to improving and maintaining the health of a community.
<b>Northeast District "Building Healthier Communities" (1995)</b>	
Area Served:	Ashford, Brooklyn, Canterbury, Eastford, Hampton, Killingly, Plainfield, Pomfret, Putnam, Sterling, Thompson, and Woodstock
Participants:	Community Health Coordinating Council (health, social services, and provider organizations within the district) and the Northeast District Department of Health.
Goals:	To fulfill two core public health functions: monitoring the health status of the population, and leading the development of health policy and planning.
Priorities:	<ul style="list-style-type: none"> <li>• Alcohol and Drug Use (Particularly Involved In Motor Vehicle Fatalities)</li> <li>• Smoking (Particularly Among Teens And Pregnant Women).</li> <li>• Teenage Pregnancy</li> <li>• Violence And Abusive Behavior</li> </ul>
Of Note:	In June 1996, the NDDH, for the Coordinating Council, published " <i>Health Highlights: Selected Health Status Indicators and Objectives for Northeastern Connecticut</i> " which compared district health status data with state and national data and <i>Healthy People 2000</i> target objectives.
<b>PATCH - Planned Approach to Community Health (1984)</b>	
Area Served:	Middletown, Middlefield, Portland, Durham, Haddam, Cromwell, East Hampton, and East Haddam
Participants:	Representatives from the communities, the Connecticut DPH, Middlesex Hospital, and the Centers for Disease Control and Prevention.
Goals:	Engage a broad-based group of community participants which actualizes a shared visions for a healthy community.
Priorities:	<ul style="list-style-type: none"> <li>• Community needs assessments</li> <li>• Health improvement plan</li> <li>• Coalition with nontraditional partners to establish an effective public/private partnership for community health.</li> </ul>

SPARC : Sickness Prevention Achieved Through Regional Collaboration	
Area Served:	Litchfield County in Connecticut
Participants:	CT AARP, DPH, legislators, CT Peer Review Organization, Centers for Disease Control & Prevention, New Milford Visiting Nurse Association, Salisbury Public Health Nursing Association, Sharon Hospital, Torrington Area Health District, Visiting Nurse and HomeCare, Washington-Warren Visiting Nurse Association.
Goals:	To improve the health status of residents by increasing access to clinical preventive services.
Priorities:	<ul style="list-style-type: none"> <li>• Develop a regional network of providers</li> <li>• Provide a means of tracking clinical prevention activities</li> <li>• Increase the utilization of preventive services</li> </ul>
Of Note:	The region is a three-state, four-county area that includes Dutchess and Columbia Counties, New York and Berkshire County, Massachusetts.
Stratford Health Advisory Council - "Building a Healthy Community" (1994)	
Area Served:	Stratford
Participants:	Stratford Health Department assumed the leadership role among the members representing health, business, education, social service, and community sectors in town. Includes DPH, Bridgeport Hospital, Chamber of Commerce, Council of Churches, Board of Education, and the Stratford Youth and Family Advisory Board.
Goals:	To assist the Town Manager and Health Director in formulating public health policies, identifying priorities, and advancing services that truly reflect the needs of the community.
Priorities:	<ul style="list-style-type: none"> <li>• Cancer and Heart disease</li> <li>• Diet</li> <li>• Maternal and child health</li> <li>• Mental/emotional health</li> <li>• Substance abuse</li> <li>• Youth risk behaviors</li> </ul>
Of Note:	The Council is focusing on heart disease and cancer for its initial community health action plan that emphasizes reducing tobacco and alcohol negative outcomes, increasing medical screening services, promoting fitness and nutrition.

## APPENDIX F

## CONNECTICUT'S MEDICAID MANAGED CARE PLANS

**Enrollment and Market Share of Medicaid Managed Care Plans  
Connecticut, as of 1/1/98**

Participating Plans <sup>9</sup>	Description	Enrollment <sup>10</sup>	Market Share
Blue Cross/Blue Shield of Connecticut	Traditional plan	64,922	30%
Community Health Network	Fully capitated/FQHC model/serve Medicaid only	20,141	9%
HealthRight	Fully capitated/FQHC models/serve Medicaid only	29,542	14%
Kaiser Permanente	Traditional plan	4,815	2%
MD Health Plan	Traditional plan	24,706	11%
Oxford Health Plan	Traditional plan	33,069	15%
Physicians Health Services	Traditional plan	21,533	10%
Yale Preferred One, Inc.	Serve Medicaid only	19,554	9%
Total		218,282	

Source: DSS, Benova, Inc. Monthly Enrollment Report.  
These numbers represent the enrollment and eligibility activity as of the month end cut off data of 11/25/97. These numbers fluctuate daily as retroactive changes are made in eligibility status.

<sup>9</sup> Since initial publication of the *Assessment* in January, 1998, Oxford has left the program bringing the total number of participating plans to seven.

<sup>10</sup> As of November 1998, total enrollment has increased to 223,808 with the market shares increasing 2-3% for all plans except for Kaiser.

# APPENDIX G

## SAFETY NET PROVIDERS IN CONNECTICUT

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A Report to the Public Health Subcommittee of the Medicaid Managed Care Council of  
the Connecticut State Legislature  
by the Connecticut Department of Public Health, January, 1998

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#### EDITOR'S NOTE:

The "Safety Net Providers in Connecticut" was developed independently, and published separately from the State Health Assessment. The report is an important planning document and supports the State Health Assessment. Therefore, the entire document, including Appendices, is included as Appendix G of the State Health Assessment.

## EXECUTIVE SUMMARY

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With the advent of managed care and other major shifts in the health care funding environment, municipal health departments and voluntary or nonprofit sector health care agencies in Connecticut, which make up the state's health care "safety net," faced a shifting client base, increased administrative costs, and decreased revenues. Reportedly this had forced some providers to consolidate operations, curtail services or close down entirely. Weakening of this infrastructure threatens not only the state's capacity to care for its uninsured and for its populations at risk but also its ability to meet its overall public health obligations to promote health and prevent disease and injury.

At the request of the Public Health Subcommittee of the State Legislature's Medicaid Managed Care Council, an inventory of "safety net" health care providers in Connecticut was undertaken by DPH. The study also included information about: personal care services versus population-based services, both of which these providers deliver; gaps where requested information is not available to DPH; fiscal constraints and limitations on statutory authority that prevent DPH from carrying out monitoring as requested by the Subcommittee; considerations in establishing a monitoring and surveillance system for safety net providers in Connecticut; and suggestions for further research.

The study defined as safety net providers: community health centers, school-based health centers, local health departments, visiting nurses associations (VNAs), family planning clinics, and public health dental service sites. Nearly 300 safety net providers in these six categories were identified. Background information on each of the six groups of providers was provided along with legal mandate, regulatory or licensure requirements, funding, and the kind of data DPH collects on each group.

Aggregate data rather than client-based data were generally collected from each group of safety net providers. Licensure requirements and grant administration requirements formed the basis for the kind of data that DPH collects. However, statutory authority for data requirements and data collection by DPH is limited (the exception is a broad statutory reporting requirement to DPH for local health departments).

DPH has gaps in data about the fiscal status and performance of safety net providers due to lack of timeliness of such data; fragmentation in its collection and in its handling due to the categorical nature of most DPH programs; lack of adequate staff and resources to handle the design, collection, and analysis of the data system; and limitations on data requirements from the laws themselves. The capacity of many of the providers to supply detailed information and specific kinds of data is a problem. Also, health care providers are reluctant to provide certain kinds of information considered proprietary such as fiscal well-being or service delivery patterns.

To effectively monitor the status, performance, and fiscal solvency of safety net providers, a monitoring and surveillance system very different from what DPH currently has in place would be needed. This system would require access to: timely information from the agencies on a regular basis; data that is uniform from provider to provider; client specific data on service delivery including demographics, diagnosis, units of service by provider, and payer; data on performance, client services and quality of care, especially changes in any of these areas; and information on the fiscal status and financial solvency of the provider. Lastly, it requires appropriate statutory authority to carry out these functions.

Suggested areas for further study were: the design of a surveillance system for monitoring the status of safety net providers; and the identification and validation of performance indicators for safety net providers in the community.

## 1 INTRODUCTION AND PURPOSE

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This report is in response to a request from the Subcommittee on Public Health of the Medicaid Managed Care Council. The Subcommittee was concerned about the impact of the current health care delivery environment, particularly the advent of the state's Medicaid Managed Care Program, on safety net health care providers in the state. The report provides information on what data DPH normally collects on these providers. Also provided is information on legal, resource or other limitations in carrying out the Subcommittee's request from last legislative session for a monitoring and surveillance system.

## 2 BACKGROUND

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With the advent of managed care and other major shifts in the health care funding environment, municipal health departments and voluntary or nonprofit sector health care agencies in Connecticut, which make up the state's health care "safety net," faced a shifting client base, increased administrative costs, and decreased revenues. Reportedly this has forced some providers to consolidate operations, curtail services or close down entirely. Weakening of this infrastructure threatens not only the state's capacity to care for the uninsured and populations at risk, but also its ability to meet its overall public health obligations to promote health and prevent disease and injury.

In March, 1997, the Public Health Subcommittee of the State Legislature's Medicaid Managed Care Council completed a study of Connecticut's safety-net providers, as "providers of last resort," and their participation in the state's Medicaid Managed Care Program (known as "Connecticut Access"<sup>11</sup>). The study, entitled, *The Status of Safety Net Providers in Connecticut*, provided information about the experiences of these providers one year after implementation of the Connecticut Access Program.

As a result of this initial study, the Subcommittee recommended that the Connecticut Department of Public Health (DPH):

1. Provide an inventory of safety net providers in the state. (The original definition from the Subcommittee included: community health centers, child guidance clinics, school-based health centers, local health departments, nonprofit VNAs, family planning clinics, and public health dental services.)
2. Include in the inventory (a) a catalog of direct and population-based services provided to both insured and uninsured clients at each site; (b) the number of services provided at each site; and (c) the payer mix of clients.
3. Develop an ongoing monitoring system to identify safety net provider reductions in services including, but not limited to, medical social work, outreach, psychological testing and home visitation.
4. Be authorized to convene a public hearing to discuss and plan for the impact of a reduction in services when a safety net provider is at risk of closing or reducing services.

These recommendations were included in Public Act 97-240, *An Act Concerning Medicaid Managed Care*, which was passed by the State Legislature in 1997 but later vetoed by the Governor.

The Subcommittee subsequently asked DPH to carry out these activities despite the absence of a statutory mandate. DPH agreed to provide the Subcommittee in January, 1998, the following information, where it was available *in-house* and could be obtained with current resources:

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<sup>11</sup> Since publication of this report in January, 1998, the Medicaid managed care program is now referred to as HUSKY Part A (formerly know as "Connecticut Access").

1. An *inventory* of safety net providers as could be determined from DPH regulatory and grant administration activities. (A modified definition was agreed upon: community health centers, school-based health centers, local health departments, nonprofit VNAs, family planning clinics, and public dental service sites. Child guidance clinics were deleted).
2. Clarification of *personal care services* versus *public health/ population-based services*, both of which these providers deliver.
3. Identification of *gaps* where information previously requested is not available to DPH.
4. Identification of *fiscal constraints and limitations* on statutory authority that prevent DPH from carrying out such a monitoring system.
5. *Considerations* in establishing a monitoring and surveillance system.
6. *Suggestions* for further study.

### 3 PUBLIC HEALTH AND PUBLIC HEALTH SERVICES

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DPH acknowledges the importance of these health care providers and the critical role they play in public health and health care delivery in Connecticut.

The *mission* of agencies serving the public's health is to assure conditions in the community in which people can be healthy. The *substance* of public health is organized community efforts aimed at the prevention of disease and injury and the promotion of health.

When looking at these safety net providers and their roles, it is important to keep in mind the different kinds of services that are provided -- *personal health care* services versus those that are *population-based*.

## POPULATION-BASED SERVICES

The provision of population-based services is directly related to the provision of essential public health services. Population-based services are identified as interventions to alter the social and physical environment, to change health-related behaviors, or to reduce directly the risk of causing a health problem. These services are generally developed and available for an entire population of a community or the state rather than just for individuals. They may include the following:<sup>12</sup>

- Diagnose and investigate health problems and health hazards in the community.
- Inform, educate, and empower people about health issues.
- Mobilize community partnerships and action to identify and solve health problems.
- Develop policies and plans that support individual and community health efforts.
- Enforce laws and regulations that protect health and ensure safety.
- Link people to needed personal health services and assure the provision of health care when otherwise unavailable.
- Assure a competent public health and personal health care workforce.
- Evaluate effectiveness, accessibility, and quality of personal and population-based health services.
- Conduct research for new insights and innovative solutions to health problems.

## PERSONAL HEALTH SERVICES

In contrast to population-based services, personal or direct health services involve a one-on-one interaction between a health care professional and a patient. Direct services address physical, mental, or social functioning of the individual and may be performed by health care professionals for the purpose of promoting, maintaining, and restoring health. These services include what most consider ordinary medical care, including inpatient and outpatient medical services, allied health services, drugs, laboratory testing, x-rays, and dental care. In Connecticut they are delivered primarily by private sector organizations, such as community health centers and VNAs, but in many communities, municipal health departments may provide many of these services, especially for disadvantaged populations.<sup>13</sup>

The delivery of personal health services is separate but complementary to the delivery of population-based services. When looking at safety net health care providers and their importance to health in this state, we must keep in mind that these providers contribute to both, and that both are critical to the well-being of people in Connecticut. Both personal and population-based services need careful monitoring when agencies go into crisis, and both need careful attention in the current health care environment.

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<sup>12</sup> U.S. Public Health Service, Essential Public Health Services Work Group. 1994.

<sup>13</sup> U.S. Public Health Service, Essential Public Health Services Work Group. 1994.

## 4 IMPORTANCE OF SAFETY NET PROVIDERS

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Connecticut lacks a county structure and the formal regional systems of public health and health care delivery found in other parts of the United States. As identified by the Subcommittee on Public Health in its 1997 study, the state has traditionally relied on the voluntary or nonprofit sector to provide to its cities and towns many of the services and functions that are considered “public health” and would normally be delivered by the public sector.

Further, *safety net providers* in Connecticut have the following important characteristics:

1. Their services and role are seen as essential and critical to the well-being of the community and/or state. Therefore, their presence and activities are often mandated, authorized, or in some way sanctioned by state public health laws, municipal charter, or local public health ordinances.
2. The providers are substantially funded through public moneys (federal, state, local) to carry out certain public health functions or meet the health needs of certain populations that are underserved or at risk.
3. The providers’ service histories evolved in response to defined public health needs within their communities. The providers are now recognized by state/local government as providing essential services to meet specific needs in the communities they serve.
4. The focus of service is population-based, not just client-based, and has an impact on the entire population or a significant subset of it.

Based on the preceding criteria, the following types of providers were included in the Subcommittee’s definition of a safety net provider:

- Community Health Centers
- Family Planning Clinics
- Public Health Dental Service Sites
- School-based Health Centers
- Visiting Nurse Associations Local Health Departments/Health Districts

The role of the state’s safety net providers is especially important in this period of transition in health care financing and service delivery, for experience has shown the following:

1. These providers bring to the health care delivery system a *grassroots* understanding of community needs and community priorities.
2. They often serve as *points of entry* into a system of care that is culturally and linguistically competent and provides comprehensive primary care that is responsive to consumers’ specific needs.
3. Many provide the important *enabling services* required by vulnerable populations to assure access to health care, including outreach, transportation, interpreter services, child care and community health awareness.
4. Some are very effective as *buffers* for consumers in negotiating health plan enrollment and obtaining authorization for needed services in an evolving managed care environment.

## 5 INVENTORY OF SAFETY NET PROVIDERS

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As requested, an inventory was performed to identify the following kinds of safety net providers:

- Community Health Centers
- Family Planning Clinics
- Public Health Dental Service Sites
- School-Based Health Centers and Clinics
- Visiting Nurse Associations
- Local Health Departments and Health Districts

The community health centers, family planning clinics, school-based health centers and clinics, visiting nurse associations and their well-child clinics, and local health department-sponsored clinics were identified through use of Department of Public Health licensure files. Public health dental service sites were identified by DPH's Oral Health Program, through program files, licensure files, and a recent survey of providers. The local health departments and health districts were identified by DPH's Local Health Administration Program through its grants-in-aid program and administrative files.

A summary of DPH's authority for, jurisdiction over, oversight of, and relationship to the six kinds of safety net providers is provided below. Information is given on the kinds of data DPH collects on these providers. Listings of providers in each category and maps showing their locations in the state are given in the *Appendices A-F*.

## COMMUNITY HEALTH CENTERS

### Introduction

For almost 30 years, community health centers (CHCs) have been a critical source of health care for the poor, underserved, and vulnerable populations at risk in many communities throughout Connecticut. They have provided a consistent "medical home" for hundreds of thousands of uninsured and underinsured people, assured access to cost-effective, high quality preventive and primary care services, and have contributed to the improvement of overall health status in the communities they serve. Community health centers are private, non-profit corporations that provide a wide range of primary care services to the communities they serve. Depending on community need, many also offer dental services, addiction services, and social and outreach programs. The structure, organization, and operation of the centers is defined in state law. There were 14 community health center corporations in Connecticut in state fiscal year (SFY) 1996-1997, 12 of which are currently operational. Meri-Care, Inc. in Meriden, CT merged with The Community Health Center of Meriden, Inc. in early 1997, bringing the number to 13. The Norwalk Community Health Center, which is in its fourth year of planning, has a board and administrative staff, but is not yet operational. The 12 remaining corporations currently run a network of 55 clinical sites. The sites include school based health centers, dental service sites, shelters for the homeless, senior center clinics, and general primary care clinics. The two aforementioned transitional sites are included in *Appendix A*; Meri-care continues to run its dental clinic, but has closed its community health center operations.

### Legal Mandate

There is no legal mandate for community health centers in Connecticut. Their formation is the result of longtime voluntary community efforts in response to local community needs.

Community health centers are defined under Section 19a-490(a) of the *Connecticut General Statutes* for funding purposes. All community health centers must be located in federally designated medically underserved areas or serve medically underserved populations, have a board composition that is predominantly community users, have certain staffing and hours of service, provide a sliding fee schedule, and meet other criteria defined in law.

Regulatory Requirements

Community health centers are subject to licensure as outpatient clinics under Section 19a-493 of the *Connecticut General Statutes*. CHCs are licensed by DPH biennially. The process for licensure includes filing of application materials with DPH and unannounced on-site inspections by DPH of each site run by the CHC. The licensure inspection process reviews compliance with the regulations identified in the State Public Health Code, which address minimum care standards, including administration of the clinic, governing authority, physical plan, personnel, clinical services and quality of care.

When CHCs are not in compliance with the requirements of the Public Health Code, DPH issues findings which require the provider to submit a written plan of correction. The plan of correction submitted to DPH reflects the mechanisms the provider will implement to correct the situation. Department staff validate that the provider has implemented its plan of correction. A variety of disciplinary actions as defined in Section 19a-494 of the *Connecticut General Statutes* may be pursued for adverse findings that have a significant impact on the care and services provided to clients. Disciplinary actions may include consent orders, reprimands, licensure suspension or revocation.

Data

Based on SFY 1997 fiscal information, the community health centers had the following payer mix (percentages are approximate):

Title XIX/Medicaid	42%
Uninsured	24%
Private insurance (complete/partial)	18%
City welfare	13%
Medicare	3%
<b>Total:</b>	<b>100%</b>

From SFYs 1991 through 1997, DPH funded the Connecticut Primary Care Association (CPCA) to subcontract with all the community health centers in the state for operational and expansion services and to collect and provide data to DPH. Information included utilization, payer mix, and demographic data by center.

Data reported to DPH by CPCA showed that utilization of CHC services from SFYs 1991 to 1996 more than doubled. During this same period, the number of unduplicated clients served nearly doubled as well. In SFY 1996-1997, community health centers served nearly 160,000 people through 56 clinical sites. Forty percent of the clients served, or 64,000, were under age 19 years, and 24% of all clients were uninsured.

Effective July 1, 1997, DPH began directly administering its contracts to the CHCs in the state. DPH collects the following information on community health centers through its annual/biennial contracts: client demographics; numbers of users, visits, and encounters; types of services; visit payment sources; use of grant moneys and expenditures; and compliance with the Office of Policy and Management (OPM) performance measures. Although the centers collect information on individual clients, it is reported in the aggregate to DPH.

Funding

Community health centers are funded by DPH for general operations, expansion activities, and specific programs (e.g. sexually transmitted diseases (STD) screening, HIV/AIDS testing and counseling, and immunization tracking); by the State Bonding Commission for capital projects; and by federal grants such as 330 funds from the U.S. Public Health Service (federal moneys for start up and general operations). They also receive private donations, some municipal moneys, and collect fees through private pay, Title XIX, and private insurers.

Community health centers are also supported financially through several state and federal programs: the State Loan Repayment Program, which helps to attract qualified health care professionals to community health centers by paying for their educational loans; the placement of National Health Service Corps (NHSC) professionals in qualified community health centers; the recommendation of qualified foreign physicians for 2-year federal immigration waivers (under the J-1 Visa Program) so that they can work in primary care settings in federally designated underserved areas; and the federal Primary Care Fellowship Program, which funds the placement of medical students and nurse practitioner students in community health centers as part of their graduate education.

Funding for community health centers in Connecticut in SFY 1996-1997:

State funding (general operations and expansion)	\$4,830,557
State funding (bonding)	210,000
Federal funding (330 funds, NHSC, Loan Repayment)	<u>410,200</u>
<b>Total:</b>	<b>\$5,450,757</b>

## FAMILY PLANNING CLINICS

### Introduction

For decades, the network of family planning clinics in Connecticut has provided comprehensive reproductive health services to men and women of all ages. Services include: contraceptive counseling; preconceptual counseling; pregnancy screening and options counseling; STD screening; HIV/AIDS testing and counseling; and health promotion activities such as influenza immunizations and nutrition counseling. Special outreach is provided to adolescents, minorities, and homeless women.

In SFY 1997 there were 27 licensed family planning clinic sites in the state. Planned Parenthood of Connecticut closed its Middletown facility in the fall of 1997, bringing the number to 26. Locations of family planning clinics are listed in *Appendix B*.

### Legal Mandate

There is no legal mandate for family planning clinics in Connecticut. Their development is the result of voluntary community effort in response to local community needs and changing technology.

### Regulatory Requirements

Family planning clinics (FPCs) may be a singular service or a component of multiple health services provided by a community health center, a hospital, or a local health department. Such services are subject to licensure under Section 19a-493 of the *Connecticut General Statutes*. FPCs are licensed by DPH biennially. However, service sites operated by a hospital are subject to the same licensing requirements governing the hospital. The process for licensure includes filing of application materials with DPH and unannounced on-site inspections of the family planning clinic site by DPH. The licensure inspection process reviews compliance with the regulations identified in the State Public Health Code, which address minimum care standards including administration of the clinic, governing authority, physical plan, personnel, clinical services and quality of care.

When a clinic is not in compliance with the requirements of the Public Health Code, DPH issues findings which require the provider to submit a written plan of correction. The plan of correction submitted to DPH reflects the mechanisms the provider will implement to correct the situation. Department staff validate that the provider has implemented its plan of correction. A variety of disciplinary actions as defined in Section 19a-494 of the *Connecticut General Statutes* may be pursued for adverse findings that have a significant impact on the care and services provided to clients. Disciplinary actions may include consent orders, reprimands, licensure suspension or revocation.

Data

DPH collects the following information on family planning clinics through its contracts: numbers, gender, and ages of patients served; services provided; number of educational programs presented and number of clients in attendance; use of grant moneys and expenditures; and compliance with OPM performance measures. While the centers collect information on individual clients, it is reported in the aggregate to DPH.

In SFY 1997, nearly 18,000 people were served in the 19 sites funded by DPH. Of these, 6,200 (about 31%) were under 19 years of age.

Funding

Family planning clinics are funded by DPH for general operations and for specific programs (such as STD and HIV/AIDS testing and counseling), and with federal grants through Title X. They also receive private donations, some municipal moneys, and collect fees through private pay, Title XIX, and private insurers. DPH contracts for services with Planned Parenthood of Connecticut, which then subcontracts with 19 family planning affiliates. DPH funding to family planning clinics in SFY 1997 is shown below.

State funding (general operations and expansion)	\$1,172,644
State funding (STD, breast/cervical cancer screening, etc.)	108,845
Federal funding (Title X)	<u>1,690,905</u>
<b>Total</b>	<b>\$2,972,394</b>

Information on payer mix is shown below for SFY 1997.

<b>Funding source</b>	<b>No. clients served</b>	<b>Percent of total</b>
Title XIX/Medicaid	16,972	41%
Private insurance (complete/partial)	1,216	3%
Self pay: (all or part expected)	10,696	25%
No source - free (no charge/no third party)	1,579	4%
All other sources*	11,224	27%
<b>Total</b>	<b>41,687</b>	<b>100%</b>

\* Other sources = number of visits by individuals whose care was paid for, billed to, or supported by other federal, state, or local sources such as Title X, Title XX, CHAMPUS, special State appropriations, town/local moneys, private charities, Title V funds, State matching funds, or local matching funds.

## PUBLIC HEALTH DENTAL SERVICE SITES

### Introduction

For nearly a century, preventive dental care has been provided through Connecticut's schools. Largely responding to a growing recognition of the importance of good oral health to overall health and to the need to assure oral health care access for all, Connecticut has witnessed a significant increase in the number of community health centers, school-based health centers, hospitals and other community public health facilities that offer preventive and primary oral health services. These facilities have proven to be a critical source of oral health care for uninsured, underinsured and otherwise vulnerable populations. The community-based public health facilities have been able to provide cost-effective, high quality preventive and primary oral health care services, thereby improving the overall health status of Connecticut's residents.

### Legal Mandate

There is no legal mandate in Connecticut for public health dental service sites. Their development has often been the result of voluntary efforts based on community need.

### Regulatory Requirements

Public health dental services may be a singular service or a component of multiple health services provided by a community health center, a school-based health center, a hospital or a local health department. Such services are subject to licensure under Section 19a-493 of the *Connecticut General Statutes* and are licensed biennially by DPH. However, dental service sites operated by a hospital are subject to the same licensing requirements governing the hospital. The process for licensure includes filing of application materials with DPH and unannounced on-site inspections of each facility by DPH. The licensure inspection process reviews compliance with the regulations identified in the State Public Health Code, which address minimum care services including administration of the clinic, governing authority, physical plan, personnel, clinical services and quality of care.

When dental service sites are not in compliance with the requirements of the Public Health Code, DPH issues findings which require the provider to submit a written plan of correction. The plan of correction submitted to DPH reflects the mechanisms the provider will implement to correct the situation. Department staff validate that the provider has implemented its plan of correction. A variety of disciplinary actions as defined in Section 19a-494 of the *Connecticut General Statutes* may be pursued for adverse findings that have a significant impact on the care and services provided to clients. Disciplinary actions may include consent orders, reprimands, licensure suspension or revocation.

Data

There are currently 43 sites where public health dental services are provided (*Appendix C*). The sites are run by the following:

Community health center	13 sites
School-based health center	18 sites
Local health department	1 site
Hospital	<u>11 sites</u>
Total	43 sites

Several public health dental sites are currently funded by DPH to support their general operations. DPH is actively collecting and updating available information on public health dentistry in Connecticut through surveys by its Oral Health Program including: preventive and primary dental care services provided; site capacity, staffing and utilization; and oral health status and needs assessment. A survey was completed in 1997 and a report will be available in the near future.

In addition to the above, data for each dental site was recently collected and is currently being analyzed to determine the number and percent of age groupings receiving dental treatment, and the funding, revenue sources, and payer mix for dental services.<sup>14</sup>

SCHOOL-BASED HEALTH CENTERS AND CLINICS

Introduction

For more than two decades, schools in the state have attempted to bring health care services closer to students in need by providing these services on site. In 1985, a highly effective strategy for improving the health status of children and adolescents at health risk was introduced in Connecticut--the school-based health center model for the provision of primary health care and mental health services within the school setting. School-based health centers (SBHCs) provide a wide range of health care services, including dental health, mental health and social services through an interdisciplinary team. SBHCs are an important source of health care and provide a "medical home" for thousands of uninsured and underinsured children and youth in the state. A 1996 study of students in Connecticut at the time of their first visit to an SBHC revealed that nearly 32% had no regular source of health care.<sup>15</sup>

In SFY 1996-1997, there were 64 licensed clinics providing school health services in Connecticut. Of these, 46 met the criteria for a SBHC as established by DPH (see listing and map of locations in *Appendix D*). Eighteen provided dental services.

Legal Mandate

There is no legal mandate in Connecticut for school-based health centers or school health clinics. Their development has often been the result of voluntary efforts based on community interest and need.

Regulatory Requirements

School-health clinics, including school-based health centers may be a singular service provided by a board of education or local health department, or a component of multiple health services provided by a community health center or a hospital. Such services are subject to licensure under Section 19a-493 of the *Connecticut General Statutes*. SBHC's are licensed by DPH biennially. However, if the service site is operated by a hospital, it is subject to the same licensing requirements governing the hospital. The process for

<sup>14</sup> Stanton Wolfe, Oral Health Program, Connecticut Department of Public Health. Personal communication. 1997.

<sup>15</sup> Connecticut Dept of Public Health. *Voice of Connecticut Youth*. 1996.

licensure includes filing of application materials with DPH and unannounced on-site inspections of the SBHC by DPH. The licensure inspection process reviews compliance with the regulations identified in the State Public Health Code, which address minimum care standards including administration of the clinic, governing authority, physical plan, personnel, clinical services and quality of care.

When a SBHC is not in compliance with the requirements of the Public Health Code, DPH issues findings which require the provider to submit a written plan of correction. The plan of correction submitted to DPH reflects the mechanisms the provider will implement to correct the situation. Department staff validate that the provider has implemented its plan of correction. A variety of disciplinary actions as defined in Section 19a-494 of the *Connecticut General Statutes* may be pursued for adverse findings that have a significant impact on the care and services provided to clients. Disciplinary actions may include consent orders, reprimands, licensure suspension or revocation.

## Data

DPH collects the following client-specific information from all school-based health centers through its School Healthcare ONLINE!!!™ (SHO) data system: demographics, income, payment source, source of care, dates of visits, purpose of visits, services provided, ICD-9 codes, and referrals.

Through its grants administration process, DPH also collects the following information on school-based health centers that are funded through its annual/biennial contracts: client demographics; numbers of users, visits, and encounters; types of services; visit payment sources; use of grant moneys and expenditures; and compliance with OPM performance measures. While the centers collect information on individual clients, it is reported in the aggregate to DPH.

## Funding

The SBHCs are funded by municipal moneys for general operations; state grants for planning, expansion and for specific programs (such as immunizations or AIDS); federal moneys; and private funds as outlined below.

Municipal appropriations	(Must be 25% of DPH grant)
State grants	\$3,837,129
Federal grants	\$ 392,218
Private foundation moneys	\$ 725,270

No information on the SBHC's payer mix is available at this time. In SFY 1996-1997 the centers began to enter into contracts with managed care organizations for participation as providers in Medicaid Managed Care and with other private insurers. Under the Connecticut Access Program<sup>16</sup>, school-based health centers are deemed *essential providers*.

## VISITING NURSE ASSOCIATIONS

### Introduction

Visiting nurse associations (VNAs), which are traditional, nonprofit public health nursing organizations, were established in communities throughout the state in the early part of this century to care for the sick in their homes and to carry out many kinds of community activities to promote health and to

<sup>16</sup> Since publication of this report in January, 1998, the Medicaid managed care program is now referred to as HUSKY Part A (formerly know as "Connecticut Access").

prevent the spread of disease. Most of the early organizations were private, nonprofit entities supported by communities. Some were incorporated directly under town charter (nine are still under town charter).

Public health nurses and visiting nurses have a long history of serving and supporting communities across the United States. The value of their service is not just in the care of the sick, but involves assessment of living conditions and social support. Patient needs essential for independent living may not be apparent in inpatient settings. Nurses visiting homes identify and resolve issues that interfere with safe, healthy living.

The first organized home care nursing services were established to aid the poor in crowded urban tenements and isolated rural areas. The first visiting nurses focused on caring for the sick, educating mothers regarding childbirth and child health, and promoting basic public health like sanitation and nutrition. Today, visiting nurse associations continue to provide a wide range of home care services as well as services to mothers and children, screening programs for various health problems in the community, and infectious disease follow-up. Of the 40 VNAs in Connecticut, 39 currently run well-child clinics. Locations of VNAs in Connecticut are listed in *Appendix E*. In Connecticut, VNAs may serve one town (as in the case of the nine VNAs that are under their respective town charters) or multiple towns in whole regions of the state.

In the 1970's, the importance of the care of the sick expanded as shortened hospital stays and changes in technology created new markets, and home health care emerged as a distinct service. With the advent of better health insurance benefits, proprietary agencies began to compete with VNAs for paying clients. Despite the growth in the industry of for-profit home care agencies, visiting nurse associations have persevered as providers of home care to thousands of uninsured or underinsured people.

#### Legal Mandate

There is no legal mandate in Connecticut for either visiting nurse associations or home health agencies. Their development is the result of voluntary community effort in response to local community needs.

#### Regulatory Requirements

Visiting nurse associations are subject to state licensure as home health care agencies under Section 19a-493 of the *Connecticut General Statutes*. If an agency also has a well child clinic, as 39 of the 40 still do, the clinic is subject to licensure as an outpatient clinic under Section 19a-493 of the *Connecticut General Statutes*.

Each home health care agency and each well child clinic is licensed by DPH biennially. The process for licensure includes filing of application materials with DPH and unannounced on-site inspections by DPH. The licensure inspection process reviews compliance with the regulations identified in the State Public Health Code, which address minimum care standards including administration of the clinic, governing authority, physical plan, personnel, clinical services and quality of care. In the case of home health agencies, safety of patient care in the home is reviewed.

When a licensed home health agency or a licensed well child clinic is not in compliance with the requirements of the Public Health Code, DPH issues findings which require the provider to submit a written plan of correction. The plan of correction submitted to DPH reflects the mechanisms the provider will implement to correct the situation. Department staff validate that the provider has implemented its plan of correction. A variety of disciplinary actions as defined in Section 19a-494 of the *Connecticut General Statutes* may be pursued for adverse findings that have a significant impact on the care and services provided to clients. Disciplinary actions may include consent orders, reprimands, licensure suspension or revocation.

#### Data

DPH collects information from all licensed home care agencies as part of their annual licensure renewal applications. While the centers collect information on individual clients, it is reported in the

aggregate to DPH. The data provide a rich resource for examining characteristics of the population utilizing services, how services are paid, and other trends in utilization. Information collected includes:

- Agency staffing and contracts for staffing
- Services provided and hours of availability
- Client functional status
- Age, gender and racial characteristics of clients
- Sources of payment
- Client status: new, continued and readmitted
- Primary diagnosis at admission
- Reason for discharge
- Client living conditions (support)
- Number and hours of visits made (by service)
- Number Spanish speaking clients served
- Referral source.

There are 114 licensed home health care agencies in Connecticut. Of these, 40 (35%) are the traditional, not-for-profit VNAs. In SFY 1996-1997, VNA nurses and their ancillary staff made nearly 3 million visits to over 75,000 Connecticut residents. Of those served, 7.5% were under 19 years of age. The majority (65%) were over 65 years of age.

### Funding

In addition to traditional reimbursement sources, VNAs are funded by state grants for specific prevention programs (such as immunization awareness and outreach, Healthy Start or WIC); state and federal grant moneys to support home health services; some municipal funds; patient fees; and private funds and donations. Information on data collected from these sources is not available to DPH at this time. The payer mix for Connecticut VNAs for SFY 1995-1996 is shown below.

Payer	Percent
Medicare	71%
Medicaid	16%
Self pay	2.9%
VA	0.06%
Other federal	1.2%
State and local	3.0%
BC Home Care	1.5%
Other insurance	3.6%
Other sources (gratis)	1.2%

As the number of uninsured and underinsured persons grows, so will the number of persons at home without care or support. Changes in Medicare and Medicaid benefits, the largest source of payment for home care, may result in a growing population of people without resources for care at home. VNAs are challenged to continue providing high quality, effective care for those people in need.

## LOCAL HEALTH DEPARTMENTS AND HEALTH DISTRICTS

### Introduction

Local health departments (LHDs) are critical providers of population-based essential public health services at the local level in Connecticut. These departments are governmental entities separate from the State Department of Public Health, but are linked by statute in several important ways: approval of appointments of directors of health by the Commissioner of Public Health; mandates to carry out critical public health functions in the areas of infectious disease control in the community, environmental health, etc.; legal authority to levy fines and penalties for public health code violations, and to grant and rescind license permits (such as for food services establishments or septic systems); and funding to carry out the full area of public health activities to improve the health of people in their jurisdictions. Municipal health authorities and districts must include in their responsibilities the enforcement of the state public health code as required by DPH. Often this is a difficult task given the wide variety of public health services needed by communities and the limited municipal budgets to pay for those services.

Over the years, Connecticut's local health departments have moved away from direct service delivery programs, such as running clinics, home health services, and school health, and have focused more on programs that benefit the broader population, such as infectious disease control in the community and environmental health. Local health departments are the main provider agencies for population-based public health services in the state. Data from a 1991-1992 national survey of local health departments in the country showed that local health departments in Connecticut carried out a wide variety of population-based functions.<sup>17</sup> (See *Appendix G* on how Connecticut's local health departments conform with *Healthy Connecticut 2000* objective 8.14 and provide core public health services.)

Local public health services to Connecticut's 169 municipalities and 7 boroughs are delivered through either municipal (city, borough or town health departments) or through regional health departments called district health departments. (Locations of local health departments/districts in Connecticut are listed in *Appendix F*.) There are 95 municipal health departments in the state: 26 of these are full-time and 69 are part-time. There are 18 district health departments in the state for a total of 113 local health departments.

Municipal health departments in Connecticut date back to nearly the turn of the century, whereas regional health departments or health districts were first formed in Connecticut in 1966. The health districts

<sup>17</sup> National Association of County and City Health Officials. *1992-1993 National Profile of Local Health Departments*. Washington, D.C., 1995. 116pp.

are all full-time and range in size from two towns with a population of over 12,000 people, to 16 towns serving a population of over 107,000 people. More than one-third of the state's population receives its local public health services through a health district.

In the last three years (1995-97), three separate new health districts were formed by seven towns, and an eighth town joined an existing health district. Five of these eight towns dismantled full-time city or town health departments to form the regional health department. State law requires that a public hearing on the proposal to join a health district be held by the governing body of each municipality before a vote is taken (Section 19a-241(a), *Connecticut General Statutes*).

### Legal Mandate

Local health departments are the only safety net providers for which there is a legal mandate in the state (Section 19a-200, *Connecticut General Statutes*). State law requires the services of a local health director in each town. Cities and towns may either establish their own municipal health departments or they may form a regional health department, or *health district*, with one or more other towns.

### Regulatory Requirements

If a local health department or health district runs one or more clinics, as 18 of them do, the clinic is subject to licensure as an outpatient clinic under Section 19a-493 of the *Connecticut General Statutes*. Eleven local health departments run well child clinics, eight run municipal clinics that provide STD services, immunizations, etc., and one municipal health department (Waterbury) runs both kinds of clinics.

Each clinic is licensed by DPH biennially. The process for licensure includes filing of application materials with DPH and unannounced on-site inspections of the clinic by DPH. The licensure inspection process reviews compliance with the regulations identified in the State Public Health Code, which address minimum care standards including administration of the clinic, governing authority, physical plan, personnel, clinical services and quality of care.

When a clinic is not in compliance with the requirements of the Public Health Code, DPH issues findings which require the provider to submit a written plan of correction. The plan of correction submitted to DPH reflects the mechanisms the provider will implement to correct the situation. Department staff validate that the provider has implemented its plan of correction. A variety of disciplinary actions as defined in Section 19a-494 of the *Connecticut General Statutes* may be pursued for adverse findings that have a significant impact on the care and services provided to clients. Disciplinary actions may include consent orders, reprimands, licensure suspension or revocation.

Data

DPH collects data on local health departments through its grants in aid, or per capita funding, and other state administered funding. No information is collected at this time for part-time departments, unless they are grant funded. DPH does have broad authority to collect data from local health departments under Section 19a-200 of the *Connecticut General Statutes*. Full-time departments and health districts annually apply for state grants in aid. They must present a program plan for moneys, budget, and evidence of matching municipal funds (as required by law).

Further they must demonstrate compliance with the funding regulations, show that they are in compliance with state law in provision of services, and that eight basic local public health services are in place. These eight essential public health services are: public health planning, communicable and chronic disease control, health education, environmental health services, community nursing services, nutrition services, maternal and child health services, and emergency medical preparedness.

The data provide a resource for examining how local health departments are organized, what services they provide, how these are funded, population served, other trends, use of grant moneys, and expenditures.

Funding

The local health departments are funded primarily with municipal appropriations, but they also receive state grants, federal grants, and private foundation moneys. In addition, they generate revenues from fees and licenses and the imposition of fines and penalties. In SFY 1997, the following state-administered moneys were given to local health departments/districts:

Per capita grants in aid to LHDs	\$ 2,526,782
DPH grants and contracts	<u>8,082,481</u>
<b>Total</b>	<b>\$10,609,263</b>

SUMMARY OF INVENTORY

As demonstrated in the foregoing inventory, about 340 providers make up the public health safety net in Connecticut. These include:

Community Health Centers	12 corporations; 55 clinic sites
Family Planning Clinics	26 sites
Public Health Dental Service Sites	43 sites
School-based Health Clinics	64 school clinics; 46 are SBHCs
Visiting Nurse Associations	40 agencies
Local Health Departments/Health Districts	113 departments, including 18 health districts.

When overlap is eliminated (e.g., community health centers that run school-based health centers, school-based health centers that run dental service sites), the unduplicated count of safety net providers is about 300. Most safety net providers deliver personal care services, and most provide population-based services to some extent as well. All serve significant numbers of the uninsured and underinsured.

All have funding bases that are dependent on state, federal, and local moneys, grants and donations, and fees in varying amounts. These providers, who care for some of society's most vulnerable, are themselves vulnerable through their dependency on "soft" sources of moneys, and hence are vulnerable to the economy and policy shifts.

## 6 MONITORING SAFETY NET PROVIDERS

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### JURISDICTION

DPH has jurisdiction for monitoring the status and performance of safety net providers in a variety of ways, depending on the kind of provider and the intent of DPH's oversight.

DPH may have **statutory authority** to mandate that certain kinds of data be filed, such as in the case of local health departments, which are required to file an annual report of their activities according to guidance from the DPH. The limitation here is timing, as this filing occurs in the fiscal year following the year in which the activities actually occurred.

DPH may be authorized by law to take **regulatory action**, such as licensure. Here, the public health goal is to assure that minimum safe standards for care are met, and that safe care is being provided. Through initial award of and periodic renewal of a license, the performance of a provider is monitored. If minimum standards are not consistently met, a license can be revoked. A disadvantage in provider monitoring is the infrequency of inspection (annually or biennially), unless a complaint is filed or there is cause to do a special inspection.

DPH may be authorized to do **funding and grant administration**. Here a set of expectations for service delivery is specified in contract, and performance is monitored periodically. Standards are often above those set for licensure (if the provider is subject to licensure). If terms and expectations of the contract are not met, then funding can be withdrawn. Depending on the reasons for the funding and its cycle, frequent technical assistance and consultation as well as monitoring may be provided, and can produce important information on a provider's general status. However, fiscal information is limited to the grant and the terms of the contract. Information on actual patient load or census, cash flow, debts, profit margins, etc., are not available. Further, expenditure reports are made quarterly, but annual financial audits do not come in for nearly 6 months after the close of the contract year.

### GAPS IN INFORMATION

The kind of information available at DPH about the status and fiscal solvency of safety net providers is limited:

#### Mandates

DPH information is limited by the kind of mandates under which DPH collects that information. When the purpose is to assure that minimum safe standards for licensure are met, that becomes the focus of the data collected by DPH programs. When the purpose is assurance to the state that standards of performance for funding are reached, and rules for the use of state and federal moneys are followed, those areas dictate the kind of data collected.

#### Timeliness

There are gaps in the timeliness of the data. In most reports the data are at least 3 months old, and in some reports data are a year or more old at the time of receipt.

#### Categorical Funding

Information is further limited by fragmentation in both data collection and handling, due to the categorical nature of most DPH programs.

### Provider Cooperation

The capacity of many of the providers to supply detailed information and data of specific kinds is limited. Moreover, health care providers have historically been reluctant to provide certain kinds of information about their fiscal well-being or service delivery patterns or trends over several years. For example, two kinds of data that would be most valuable--data on utilization and data on cost of health care services--are also among the most sensitive for many providers to make available. It begs the question: what kind of information are safety net providers willing to provide, so that DPH could effectively monitor performance and detect serious service delivery problems or fiscal changes indicating that a provider agency is in crisis?

## CONSTRAINTS

The kind of information available at DPH is also influenced by the following constraints.

### Fiscal Constraints

A serious limitation at DPH is inadequate staff and resources to handle the full cycle from conceptualization of design to collection, analysis, and publication of data. Most areas of DPH currently lack the resources to put adequate data collection and analysis systems in place.

### Legal Constraints

Some limitations on information result from the laws, themselves. For example, with the advent of the state's *Single Audit Act*, less fiscal reporting and fewer kinds of financial data are required of state contractors, including cities and towns.

Finally, DPH's authority under Section 19a-2a of the *Connecticut General Statutes* to require providers to report certain kinds of data may be limited. This is especially true of those data considered proprietary in nature, and that requested by the Subcommittee as part of a monitoring and surveillance system.

## SUMMARY OF DPH INFORMATION

DPH has jurisdiction for monitoring the status and performance of safety net providers in a variety of ways: through licensure functions, statutory authority, and grants administration and funding activities. Licensure requirements and grant administration requirements form the basis for the kind of data that DPH collect, but statutory authority for data collection and data requirements appear limited in these areas (the exception is a broad statutory reporting requirement for local health departments). Generally, aggregate data rather than client-based data are collected.

The kinds of information available at DPH about the fiscal status and performance of safety net providers is limited by the timeliness of receipt of such data; fragmentation in its collection and handling due to the categorical nature of most DPH programs; lack of adequate staff and resources to handle the design, collection, and analysis of the data; and limitations on data collection from the laws, themselves. The capacity of many of the providers to supply detailed information and specific kinds of data is a problem. Also, health care providers are reluctant to provide certain kinds of information about their fiscal well-being or service delivery patterns, or other data that is considered proprietary.

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## 7 RESEARCH AREAS

Two areas for further study are suggested:

1. The design of a surveillance system for monitoring the status of safety net providers.
2. The identification and validation of performance indicators for safety net providers in the community.

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## 8 CONSIDERATIONS

A monitoring and surveillance system very different from what DPH currently has in place is needed to adequately monitor the status and performance of the state's safety net health care providers, and to determine their effectiveness and fiscal solvency. To become more comprehensive, the system would require access to:

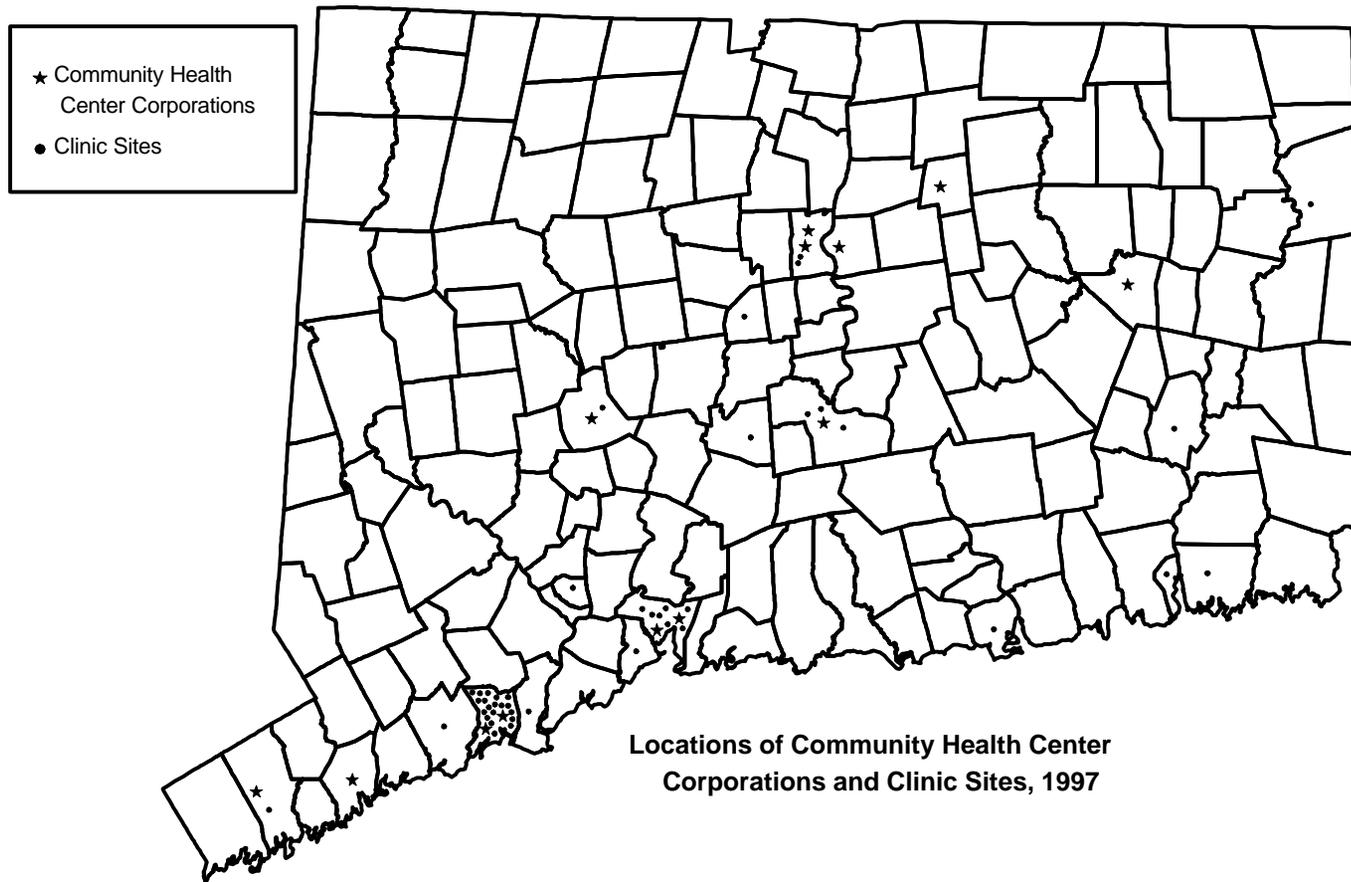
- timely information from the agencies on a regular basis.
- data that is uniform from provider to provider.
- client specific data on service delivery including demographics, diagnosis, units of service by provider, and payer.
- data on performance, client services and quality of care, especially significant changes in any of these areas; and
- information on the fiscal status and financial solvency of the provider.

Lastly, appropriate statutory authority is needed to carry out these functions. Overall, a greatly enhanced capacity for data collection and analysis, and appropriate resources, would be required.

## SAFETY NET PROVIDERS REPORT

## APPENDIX A COMMUNITY HEALTH CENTERS

<b>Community Health Centers</b>	<b>Address</b>	<b>City</b>	<b>ST</b>	<b>Zip</b>
Aequus House - Southwest Community Health Ctr	1108 Fairfield Ave	Bridgeport	CT	06605
Bridgeport Community Health Ctr, Inc	982-988 East Main St	Bridgeport	CT	06608
Bridgeport Community Health Ctr, Inc *	471 Barnum Ave	Bridgeport	CT	06608
Brooke St Shelter - Southwest Comm. Hlth Ctr, Inc	309 Brook St	Bridgeport	CT	06608
C.A.S.A - Southwest Comm. Hlth Ctr, Inc	690 Artic St	Bridgeport	CT	06608
Clinton St Shelter - Southwest Comm. Hlth Ctr, Inc	90-95 Clinton Ave	Bridgeport	CT	06604
Helping Hands of CT-Southwest Comm Hlth Ctr	1124 Iranistan Ave	Bridgeport	CT	06604
Horizons - Southwest Community Hlth Ctr, Inc	1635 Fairfield St	Bridgeport	CT	06605
Hosanna Christian Min.-Southwest Comm Hlth Ctr	1416 Fairfield Ave	Bridgeport	CT	06604
Janus House - Southwest Comm Hlth Ctr, Inc	385 Barnum Ave	Bridgeport	CT	06605
Main St Med Care Southwest Comm Hlth Ctr, Inc	779 Main St	Bridgeport	CT	06605
Mary Magdalene House Southwest Comm Hlth Ctr	1986 North St	Bridgeport	CT	06601
North End Clinic Bridgeport Comm Hlth Ctr, Inc	1381 Reservoir Ave	Bridgeport	CT	06606
Pivot Ministries Southwest Comm Hlth Ctr, Inc	495 Jane St	Bridgeport	CT	06608
Prospect House Southwest Comm. Hlth Ctr, Inc	392 Prospect St	Bridgeport	CT	06604
Ralphola Taylor Com Ctr Bridgeport Com. Hlth Ctr	790 Central Ave	Bridgeport	CT	06607
Re-Entry Ministries Southwest Comm Hlth Ctr, Inc	204 Hollister Ave	Bridgeport	CT	06607
SWCHC at Marina Vill Southwest Comm Hlth Ctr	743 South Ave	Bridgeport	CT	06604
SW Community Health Ctr, Inc*	361 Bird St	Bridgeport	CT	06605
YMCA of Greater Bridgeport-SW Comm Hlth Ctr	651 State St	Bridgeport	CT	06604
YWCA - SW Comm Hlth Ctr, Inc	753 Fairfield Ave	Bridgeport	CT	06605
Healthfirst of Killingly - Healthfirst, Inc	231 Broad St	Danielson	CT	06239
E Hartford Comm. Hlth Ctr, Inc*	94 CT Blvd.	E Hartford	CT	06108
Operation Hope Southwest Comm Hlth Ctr, Inc	50 Nichols St	Fairfield	CT	06430
Community Hlth Care Ctr of Groton	333 Long Hill Rd	Groton	CT	06340
Charter Oak Terrace-Rice Hts Hlth Ctr*	81 Overlook Terrace	Hartford	CT	06106
Community Hlth Services, Inc *	500 Albany Ave	Hartford	CT	06120
Family Hlth Ctr Charter Oak Terr/Rice Hgts Hlth Ctr	21 Grand St	Hartford	CT	06106
A.I. Prince Reg Voc-ChartOak Ter/Rice Hts CHC	500 Brookfield St	Hartford	CT	06106
Meri-Care Dental Clinic Community Hlth Ctr, Inc	165 Miller St	Meriden	CT	06450
The Comm Hlth Ctr of Meriden-Comm Hlth Ctr, Inc	134 State St	Meriden	CT	06450
Community Hlth Ctr, Inc *	635 Main St	Middletown	CT	06457
Eddy Home Comm Hlth Ctr, Inc	Labella Circle	Middletown	CT	06457
Rita Hayes Wellness Ctr Comm Hlth Ctr, Inc	66 Spring St	Middletown	CT	06457
Woodrow Wilson Middle Bsed Cli-Comm Hlth Ctr	Wilderman's Way	Middletown	CT	06457
Comm. Hlth Ctr Comm. Hlth Ctr, Inc	One Washington St	New Britain	CT	06457
Columbus House Hill Health Clinic	200 Columbus Ave	New Haven	CT	06519
Dixwell Health Ctr/Hill Health Corp.	226 Dixwell Ave	New Haven	CT	06510
Fair Haven Community Health Clinic *	374 Grand Ave	New Haven	CT	06513
Fair Haven Community Health Clinic	339 Eastern St	New Haven	CT	06513
Fair Haven Community Health Clinic	181 Mitchell Dr	New Haven	CT	06513
Hill Health Ctr, Hill Health Corp *	400-428 Columbus Ave	New Haven	CT	06519
Jackie Robinson Mid Sch Body Shop-Hill Hlth Ctr	Hillhouse HS	New Haven	CT	06519
Lincoln-Bassett School- Hill Hlth Ctr, Corp	130 Bassett St	New Haven	CT	06511
Roberto Clemente Middle Sch Body Shop	360 Columbus Ave	New Haven	CT	06519
Comm Hlth Ctr of New London - Comm Hlth Ctr	One Shaws Cove	New London	CT	06320
Norwalk Community Health Ctr*	137 East Ave	Norwalk	CT	06851
Healthfirst/Norwich Comm Hlth Ctr-Healthfirst, Inc	112 Lafayette St	Norwich	CT	06360
Comm Hlth Ctr of Old Saybrook-Comm. Hlth Ctr	263 Main St	Old Saybrook	CT	06475



Note: The stars and dots denoting the center corporations and clinics fall randomly within a town's border and are not actual site locations.  
Source: DPH, BCH & HRSD, 1998

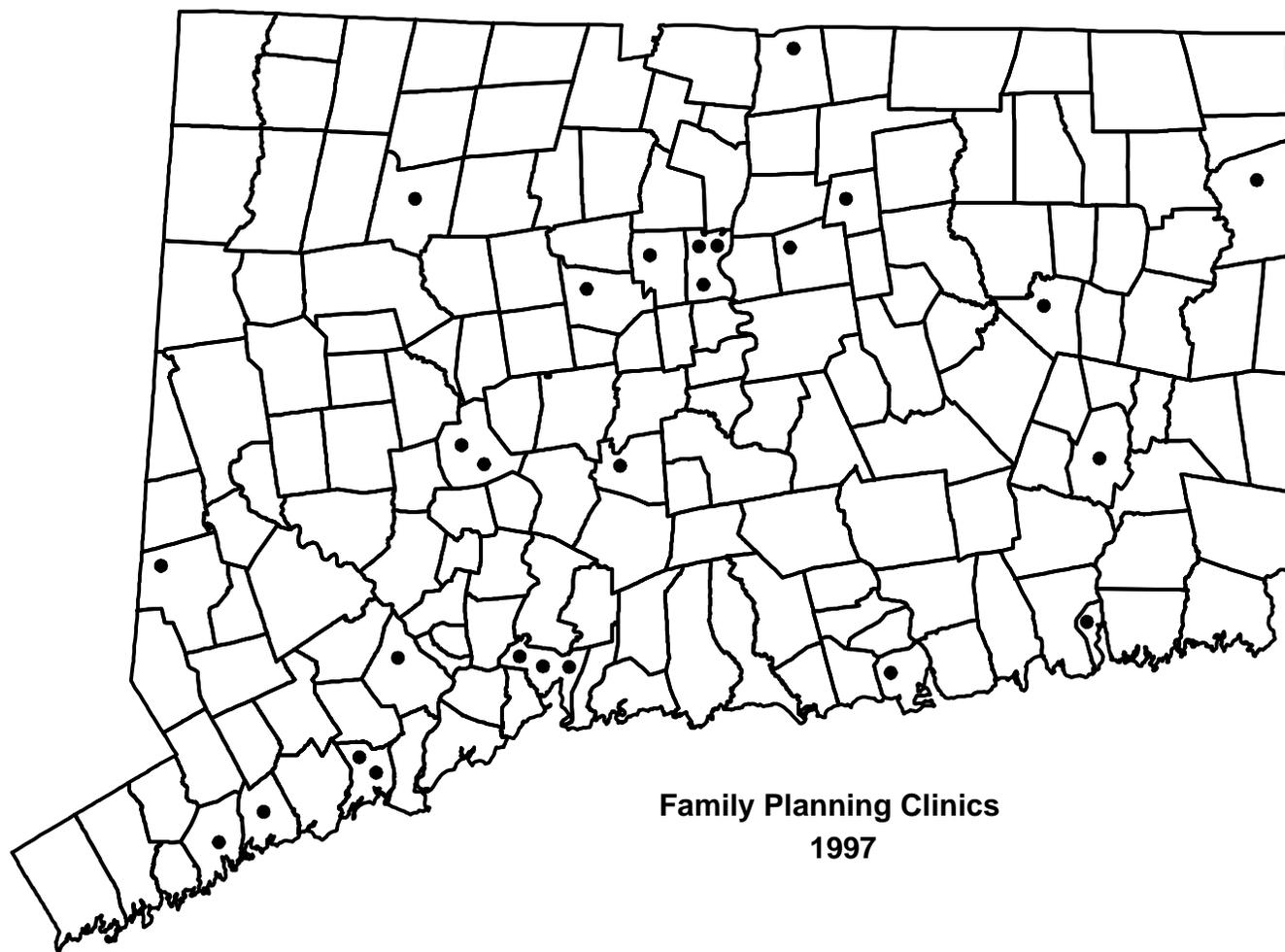
## APPENDIX A COMMUNITY HEALTH CENTERS (CONTINUED)

Community Health Centers	Address	City	ST	Zip
Stamford Comm Hlth Ctr/West Side	245 Selleck St	Stamford	CT	06902
Stamford Community Health Ctr*	137 Henry St	Stamford	CT	06902
Stratford Com Hlth Ctr-Bridgeport Comm Hlth Ctr	727 Honey Spot Rd	Stratford	CT	06497
Vernon Area Community Hlth Ctr, Inc*	43 West Main St	Vernon	CT	06066
Berkeley Heights - Staywell Hlth Care, Inc	354 Longhill Rd	Waterbury	CT	06704
Staywell Health Ctr-Staywell Healthcare, Inc*	232 North Elm St	Waterbury	CT	06702
West Haven Health Ctr-Hill Hlth Corp.	285 Main St	West Haven	CT	06516
Healthfirst, Inc *	1315 Main St	Willimantic	CT	06226

## SAFETY NET PROVIDERS REPORT

## APPENDIX B FAMILY PLANNING CLINICS

Family Planning Clinic	Address	City	ST	Zip
Planned Parenthood of CT, Inc, Bpt	753 Fairfield Ave	Bridgeport	CT	06604
Planned Parenthood of CT, Inc	779 Main St	Bridgeport	CT	06604
Planned Parenthood of CT, Inc, Danbury	44 Main St	Danbury	CT	06810
Planned Parenthood of CT, Inc, Danielson	87 Westcott Rd	Danielson	CT	06239
Planned Parenthood of CT, Inc, Enfield	76 Palomba Dr	Enfield	CT	06082
Family Planning Program	UConn Health Ctr	Farmington	CT	06032
Clinica Atabex - Hispanic HC	175 Main St	Hartford	CT	06106
Harford H.D. Planned Family Planning Project	80 Coventry St	Hartford	CT	06112
PPC - Family Planning Program	66 Hampton St	Hartford	CT	06112
Planned Parenthood of CT, Inc Manchester	419 West Middle Turnpike	Manchester	CT	06040
Planned Parenthood of Conn., Inc Health Stop	26 Woman's Way	Meriden	CT	06451
Fair Haven Comm. Hlth Ctr	374 Grand Ave - Finch	New Haven	CT	06513
Hill Health Ctr	911 Stone St	New Haven	CT	06511
Planned Parenthood of CT	129 Whitney Ave	New Haven	CT	06510
Planned Parenthood of CT, New London	45 Franklin St	New London	CT	06320
Planned Parenthood of CT, Inc, South Norwalk	50 Washington St	Norwalk	CT	06854
Planned Parenthood of CT - Norwich	12 Case St	Norwich	CT	06360
Planned Parenthood of CT., Inc, Old Saybrook	263 Main St	Old Saybrook	CT	06475
Planned Parenthood of CT., Inc, Shelton	415 Howe Ave	Shelton	CT	06484
Planned Parenthood of CT., Inc, Torrington	249 Winsted Rd	Torrington	CT	06790
Rockville General Hospital	31 Union St	Vernon	CT	06066
Planned Parenthood of CT, Inc, Waterbury	72 East Main St	Waterbury	CT	06702
Stay Well Health Ctr	232 North Elm St	Waterbury	CT	06702
PPC - Hartford - Hilda Standish Clinic	102 New Britain Ave.	W Hartford	CT	06033
Partnership Health Program	180 Bayberry La	Westport	CT	06880
Planned Parenthood of CT., Inc, Willimantic	872 Main St	Willimantic	CT	06226



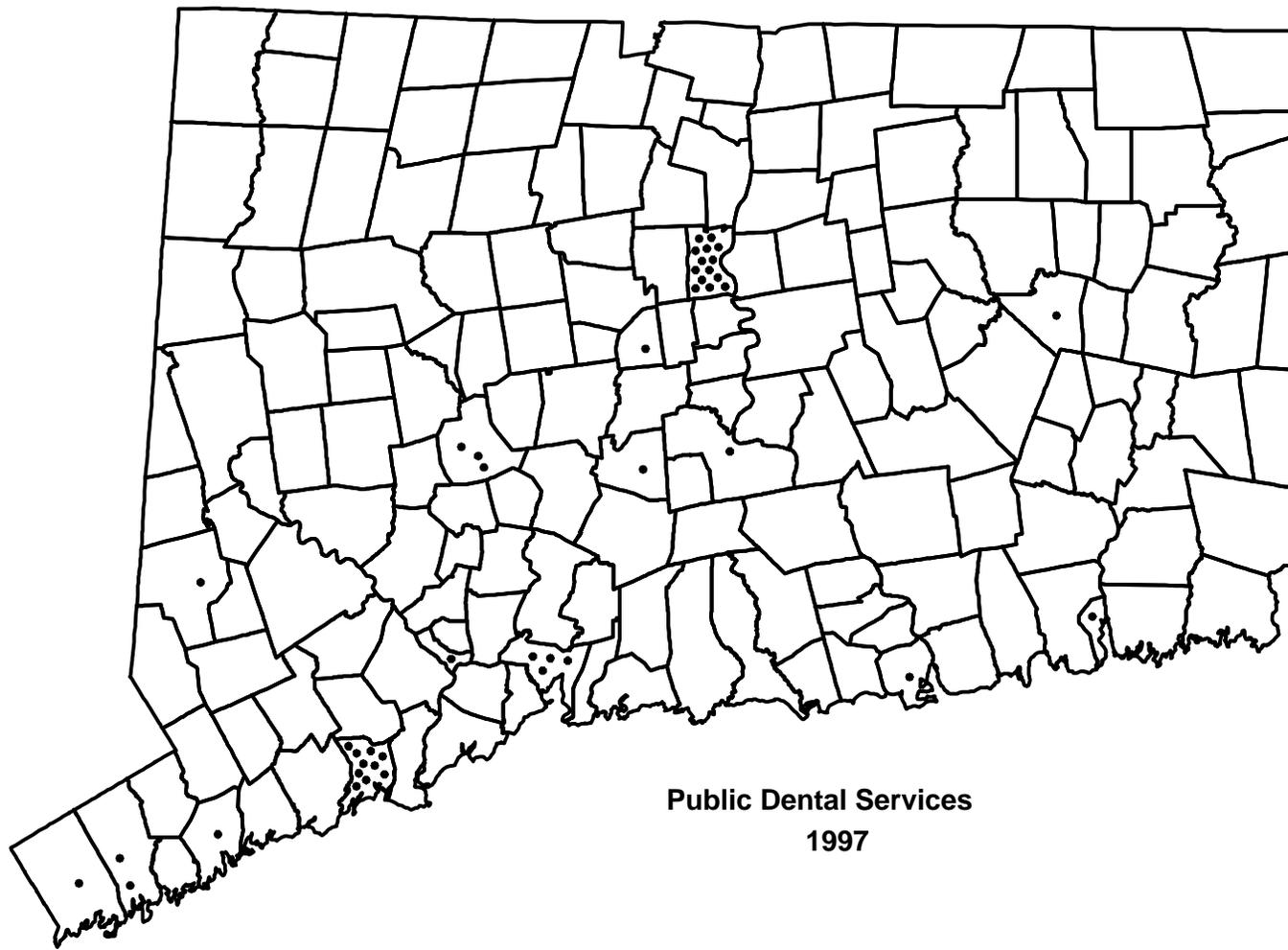
Note: The dots denoting the clinics fall randomly within a town's border and are not actual clinic locations.

Source: DPH, BCH, 1998

## SAFETY NET PROVIDERS REPORT

## APPENDIX C PUBLIC HEALTH DENTAL SERVICE SITES

Public Health Dental Service Sites	Address	City	ST	Zip
Roosevelt Elementary School	680 Park Ave	Bridgeport	CT	06604
Columbus Elementary School	275 George St	Bridgeport	CT	06604
Bassick High School	1181 Fairfield Ave	Bridgeport	CT	06605
Southwest Community Health Ctr	361 Bird St	Bridgeport	CT	06605
Central High School	1 Lincoln Blvd.	Bridgeport	CT	06606
Blackhum Elementary School	425 Throne St	Bridgeport	CT	06606
Munoz-Marín Elementary School	479 Helen St	Bridgeport	CT	06608
Bridgeport Health Dept.	752 East Main St	Bridgeport	CT	06608
Bridgeport Community Health Ctr	471 Barnum Ave	Bridgeport	CT	06608
Harding High School	1734 Central Ave	Bridgeport	CT	06610
Dental Services, Danbury Hospital	24 Hospital Ave	Danbury	CT	06810
Dental Clinic, Griffin Hospital	2 Mountain St	Derby	CT	06418
Dental Clinic, Greenwich Hospital	5 Perry Ridge Rd	Greenwich	CT	06830
Barnard Brown Elementary School	1304 Main St	Hartford	CT	06103
Community Dental Ctr, St. Fran/Mt Sinai Hosp	140 Woodland St, 3rd Fl.	Hartford	CT	06105
Betances Elementary School	42 Charter Oak Ave.	Hartford	CT	06106
Moylan Annex (McDonough Elem School)	100 Wilson St	Hartford	CT	06106
Charter Oak/Rice Heights Health Ctr	21 Grand St	Hartford	CT	06106
Burns Elementary	95 Putnam St	Hartford	CT	06106
Mary Hooker Elementary School	200 Sherbrooke Ave	Hartford	CT	06106
Maria Sanchez Elementary School	176 Babcock St	Hartford	CT	06106
Martin Luther King Elementary School	25 Ridgefield St	Hartford	CT	06112
Univ. of CT Burgdorf School of Dental Need	131 Coventry St	Hartford	CT	06112
Dental Services, Hartford Hospital	80 Seymour St	Hartford	CT	06115
Clark Elementary School	75 Clark St	Hartford	CT	06120
SAND Elementary School	1700 Main St	Hartford	CT	06120
Community Health Services, Inc	520 Albany Ave	Hartford	CT	06120
Mericare Dental Clinic/CHC Meriden	165 Miller St	Meriden	CT	06450
Community Health Ctr, Inc	635 Main St	Middletown	CT	06457
CHC of New Britain	One Washington Square	New Britain	CT	06051
Dept of Dentistry, Yale-New Haven Hos	20 York St	New Haven	CT	06504
Dept. of Oral & Maxillofacial Surg, St. Raphaels	1450 Chapel St	New Haven	CT	06511
Katherine Brennan Elementary School	200 Wilmot Rd	New Haven	CT	06511
Hill Health Ctr	400-428 Columbus Ave	New Haven	CT	06519
Dental Clinic, CHC of New London	1 Shaw Cove	New London	CT	06320
Dental Services, Norwalk Hospital	11 Maple St	Norwalk	CT	06856
Community Health Ctr of Old Saybrook	263 Main St	Old Saybrook	CT	06475
Westhill High School	125 Roxbury Rd	Stamford	CT	06902
Student Health Services of Stamford, Inc	888 Washington Blvd	Stamford	CT	06904
Stay Well Health Ctr	232 North Elm St	Waterbury	CT	06702
Dental Services, St. Mary's Hospital	56 Franklin Ave	Waterbury	CT	06702
Chase Clinic, Dental Svcs, Waterbury Hosp	64 Robbins St	Waterbury	CT	06721
Health First, Inc	1315 Main St	Willimantic	CT	06226



**Public Dental Services  
1997**

Note: The dots denoting the clinics fall randomly within a town's border and are not actual clinic locations.

Source: DPH, BCH, 1998

## SAFETY NET PROVIDERS REPORT

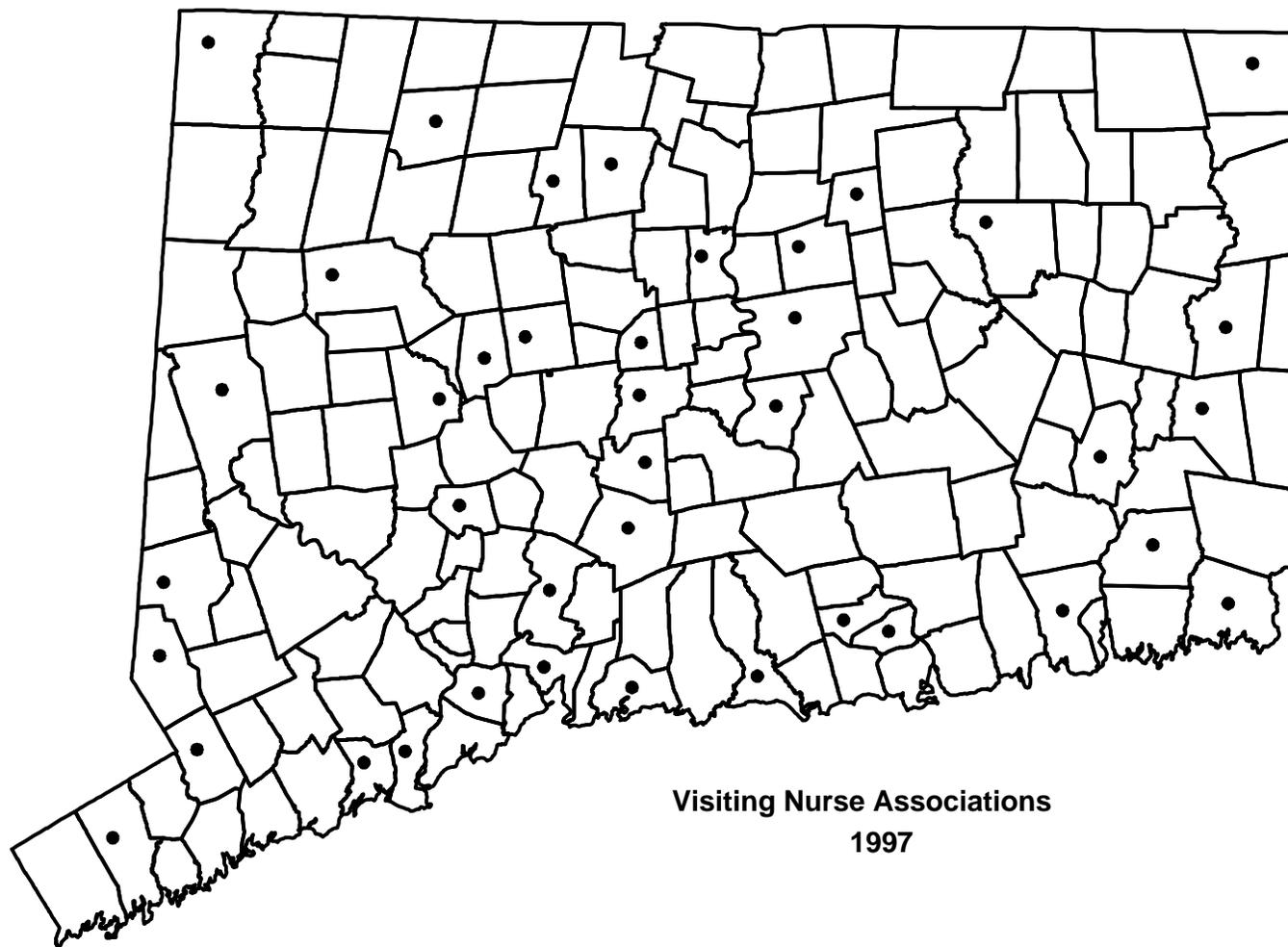
## APPENDIX D SCHOOL-BASED HEALTH CENTERS\* AND CLINICS

School Based Health Ctr or Clinic	Address	City	ST	Zip
Ansonia High School*	111 Howard Ave	Ansonia	CT	06415
Walsh Intermediate, Branford Public*	185 Damascus Rd	Branford	CT	06405
Bassick High*	1181 Fairfield Ave	Bridgeport	CT	06605
Blackham Elementary*	425 Thorne St	Bridgeport	CT	06606
Central High School*	1 Lincoln Blvd.	Bridgeport	CT	06606
Columbus Elementary School*	275 George St	Bridgeport	CT	06608
Dunbar Elementary School*	790 Central Ave	Bridgeport	CT	06607
Harding High School*	1734 Central Ave	Bridgeport	CT	06610
JFK Campus)	700 Palisade Ave.	Bridgeport	CT	06610
Luis Munoz Marin School	479 Helen St	Bridgeport	CT	06608
Read Elementary School*	130 Ezra St	Bridgeport	CT	06606
Roosevelt Elementary School*	680 Park Ave	Bridgeport	CT	06604
Parish Hill High School Reg Dist 11	PO Box 277	Chaplin	CT	06235
Danbury High School*	43 Clapboard Ridge Rd	Danbury	CT	06811
E Hartford High School*	869 Forbes St	E Hartford	CT	06118
E Hartford Middle*	777 Burnside Ave	E Hartford	CT	06108
Fitch High School*	10 Groton Long Point Rd	Groton	CT	06340
West Side Middle School*	250 Brandegee Ave	Groton	CT	06340
Hamden High School*	1141 Dixwell Ave	Hamden	CT	06514
A.I. Prince Technical School	500 Brookfield St	Hartford	CT	06106
Betances Elementary School	42 Charter Oak Ave.	Hartford	CT	06106
Bulkeley High School	300 Wethersfield Ave.	Hartford	CT	06114
Dental Div of Health Svcs/Health Educ	1305 Greenfield St	Hartford	CT	06112
Hartford Public High School*	55 Forest St	Hartford	CT	06105
Lewis Fox Middle	305 Greenfield St	Hartford	CT	06112
M.D. Fox Elementary School	470 Maple Ave	Hartford	CT	06106
Maria Sanchez Elementary	176 Babcock St	Hartford	CT	06106
Martin Luther King Elementary	25 Ridgefield St	Hartford	CT	06120
Parkville Elementary	1755 Park St	Hartford	CT	06106
Quirk Middle School*	85 Edwards St	Hartford	CT	06120
Weaver High School*	415 Granby St	Hartford	CT	06112
Madison Public Schools	10 Campus Dr	Madison	CT	06443
Macdonough Elemen. School*	66 Spring St	Middletown	CT	06457
Woodrow Wilson Middle School*	Wilderman's Way	Middletown	CT	06457
New Britain Consolidated Dist School	1 Liberty Square	New Britain	CT	06051
Clinton Ave Elementary School*	293 Clinton Ave	New Haven	CT	06511
Fair Haven Middle*	164 Grand Ave	New Haven	CT	06513
Jackie Robinson Middle School*	150 Fournier St	New Haven	CT	06511
James Hillhouse High School*	480 Sherman Parkway	New Haven	CT	06511
Katherine Brennan Elementary School	200 Wilmot Rd	New Haven	CT	06511
Lincoln-Bassett Elementary School*	130 Bassett St	New Haven	CT	06511
Roberto Clemente Middle School*	360 Columbus Ave	New Haven	CT	06519
Sheridan Middle School*	191 Fountain St	New Haven	CT	06511
Troup Science Academy Middle School*	259 Edgewood Ave	New Haven	CT	06511
Truman Elementary	114 Truman St	New Haven	CT	06519
Vincent Mauro Elementary School	130 Orchard St	New Haven	CT	06511
Wilbur Cross High School*	181 Mitchell Dr.	New Haven	CT	06511
Bennie Dover Jackson Middle School*	36 Waller St	New London	CT	06320



**APPENDIX D SCHOOL-BASED HEALTH CENTERS\* AND CLINICS**  
(CONTINUED)

<b>School Based Health Ctr or Clinic</b>	<b>Address</b>	<b>City</b>	<b>ST</b>	<b>Zip</b>
Edgerton Elementary*	120 Cedar Grove Ave.	New London	CT	06320
Harbor School*	432 Montauk Ave	New London	CT	06320
Jennings Elementary School*	50 Mercer St	New London	CT	06320
Magnet Elementary School*	200 Hempstead St	New London	CT	06320
Nathan Hale Elementary*	37 Beech Dr	New London	CT	06320
New London High School*	490 Jefferson St	New London	CT	06320
Winthrop and Smith Bent Ctr*	7 Bauxhall St	New London	CT	06320
Winthrop Elementary School*	74 Grove St	New London	CT	06320
Brien McMahon High School*	300 Highland Ave	Norwalk	CT	06854
Norwalk High School*	23 Calvin Murphy Dr	Norwalk	CT	06851
Norwich Free Academy	305 Broadway	Norwich	CT	06360
Dolan Middle School*	51 Toms Rd	Stamford	CT	06906
Stamford High School*	55 Strawberry Hill Ave	Stamford	CT	06901
Westhill High School*	125 Roxbury Rd	Stamford	CT	06902
Wooster Middle School*	150 Lincoln St	Stratford	CT	06497
Windham High School*	355 High St	Willimantic	CT	06226



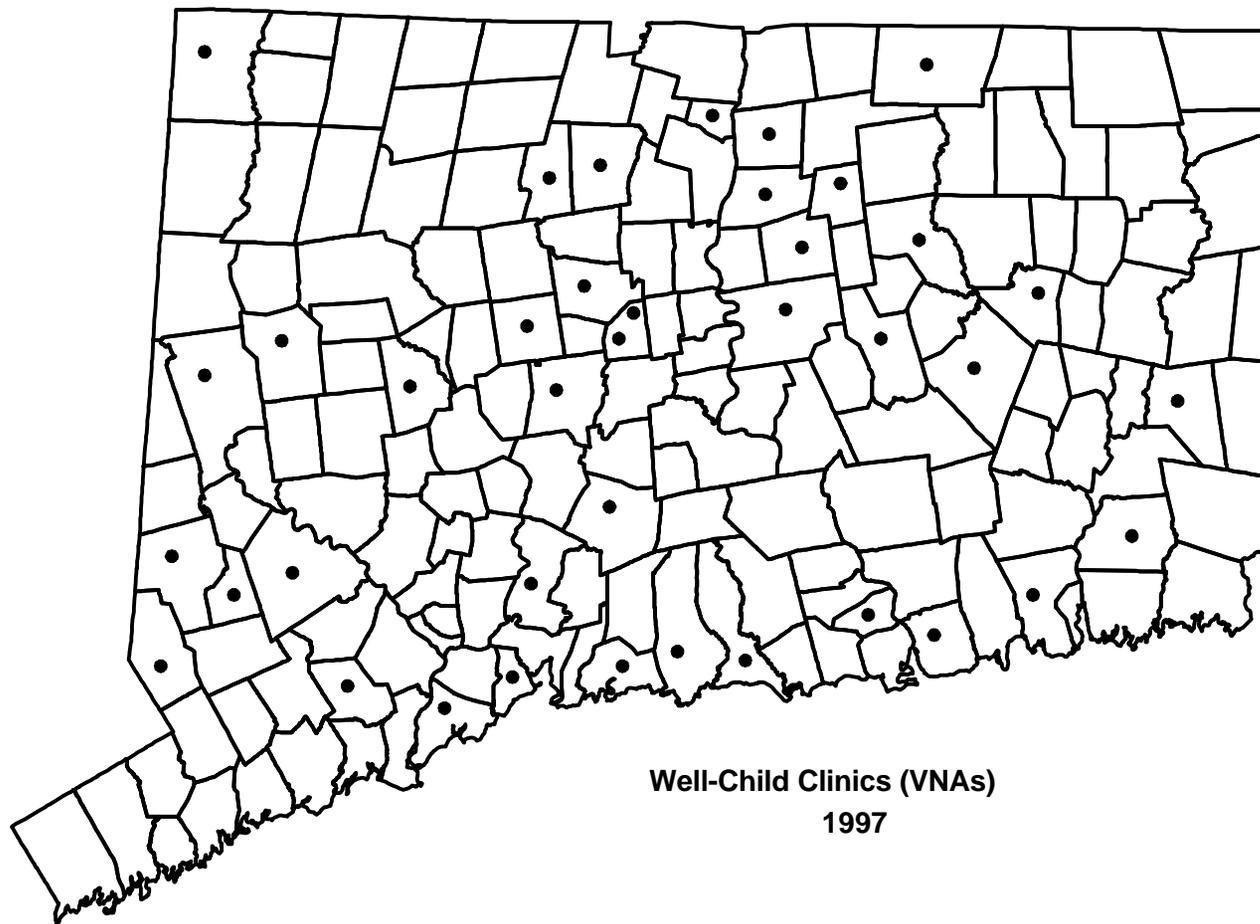
Note: The dots denoting the VNAs fall randomly within a town's border and are not actual site locations.

Source: DPH, BCH, 1998

## SAFETY NET PROVIDERS REPORT

## APPENDIX E VISITING NURSES ASSOCIATIONS

VNA	Address	City	ST	Zip
Berlin Public Health Nursing Service	240 Kensington Rd	Berlin	CT	06037
VNA Community Healthcare, Inc	40 Kirkham St	Branford	CT	06405
Visiting Nurse Services of CT, Inc	4380 Main St	Bridgeport	CT	06604
The Greater Bristol VNA, Inc	10 Malby St.	Bristol	CT	06011
Canton VNA, Inc	220 Albany Tpke	Canton	CT	06019
Danbury VNA, Inc	4 Liberty St	Danbury	CT	06810
Deep River Public Health, Nursing Service	8 Elm St	Deep River	CT	06417
Visiting Nurses of the Lower Valley, Inc	8 Essex Plaza	Essex	CT	06426
Glastonbury VNA, Inc	969 Hebron Ave	Glastonbury	CT	06033
Regional Visiting Nurse Agency, Inc	1100 Sherman Ave	Hamden	CT	06514
E Hartford VNA I	60 Hartland St., Founders Plz	Hartford	CT	06108
Griswold Public Health, Nursing Service	32 School St	Jewett City	CT	06351
Ledyard Public Health Nursing Service	741 Colonel Ledyard Hwy	Ledyard	CT	06339
Visiting Nurse and Home Care, NW	24 Village Green Dr	Litchfield	CT	06675
VNA Community Care Inc	560 Durham Rd	Madison	CT	06443
Visiting Nurse & Home Care of Manch	545 North Main St	Manchester	CT	06040
Visiting Nurse & Community Hlth of Eastern CT	Box 716, 34 Ledgebrook Dr	Mansfield	CT	06250
Meriden Public Health & VNA	658 Broad St	Meriden	CT	06450
Naugatuck Visiting Nurses Association	16-20 Park Place	Naugatuck	CT	06770
VNA of Central CT, Inc	205 West Main St, Box 1327	New Britain	CT	06050
VNA of South Central CT	One Long Wharf	New Haven	CT	06511
New Milford VNA, Inc	68 Park La Rd	New Milford	CT	06776
United Community Svcs - Community Nursing	77 East Town St	Norwich	CT	06360
Orange VNA	525 Orange Ctr Rd	Orange	CT	06477
Stonington VNA, Inc	20 S. Anquilla Rd	Pawcatuck	CT	06379
Visiting Nurse and Home Care, Inc	146 New Britain Ave	Plainville	CT	06062
Portland Visiting Nurses Association, Inc	309 Main St	Portland	CT	06480
VNA of Southern Worcester	148 Old Turnpike, Route 131	Quinebaug	CT	06262
VNA of Ridgefield, Inc	90 East Ridge	Ridgefield	CT	06877
Salisbury Public Health Nursing Assoc	30 Salmon Kill Rd	Salisbury	CT	06068
VNA Valley Care, Inc	8 Old Mill La	Simsbury	CT	06070
VNA Care, Inc	129 East Main St	Stamford	CT	06911
Stratford VNA, Inc	88 Ryder's Landing	Stratford	CT	06497
Plymouth Public Health Nursing Service	Town Hall, 19 East Main St	Terryville	CT	06786
Visiting Nurse and Community Care, Inc	8 Keynote Dr	Vernon	CT	06066
VNA of Wallingford, Inc	701 Ctr St, PO Box 657	Wallingford	CT	06492
VNA of Southeastern CT	200 Boston Post Rd	Waterford	CT	06385
VNA Health at Home, Incorporated	27 Princeton Rd	Watertown	CT	06795
Nursing Home and Home Care, Inc	180 School Rd, PO Box 489	Wilton	CT	06897
Foothills Visiting Nursing & Home Care	32 Union St	Winsted	CT	06098



Note: The dots denoting the clinics fall randomly within a town's border  
and are not actual clinic locations.

Source: DPH, BCH, 1998

WELL-CHILD CLINICS (VNAS)

VNA	Well-Child Clinic	Address	City	ST	Zip
Bethel VNA	Bethel WCC	Plumtrees Rd	Bethel	CT	06801
Visiting Community Healthcare	Branford WCC	40 Kirkham St	Branford	CT	06405
Bristol VNA	Bristol VNA	10 Maltby St,	Bristol	CT	06010
Canton VNA of CT	Canton WCC	220 Albany Ave	Canton	CT	06016
Visiting Nurse & Community Care, Inc	Visiting Nurse & Community Care	First Cong Church	Coventry	CT	06066
Danbury VNA Inc	Danbury WCC	4 Liberty St	Danbury	CT	06810
Visiting Nurse & Community Care, Inc	East Windsor WCC-	School St-	East Windsor	CT	06088
Visiting Nurse of the Lower Valley, Inc	Essex WCC	8 Essex Plaza	Essex	CT	06424
VNA Farmington Valley	Farmington WCC	2 Monteith Dr	Farmington	CT	06032
VNA Health Care, Inc	Glastonbury VNA -WCC	969 Hebron Ave	Glastonbury	CT	06033
Visiting Community Healthcare	Guilford WCC	669 Boston Post Rd	Guilford	CT	06437
Regional VNA, Inc	Hamden WCC	1100 Sherman Ave	Hamden	CT	06514
Visiting Nurse & Community Hlth of Eastern CT, Inc	Hebron WCC-Hebron Public Safety Bldg.	Route 66	Hebron	CT	06248
Griswold Public Health Nursing Services	Griswold Public Health Nursing Services	32 School St	Jewett City	CT	06351
Visiting Nurse & Community Hlth of Eastern CT, Inc	Lebanon WCC-Lebanon Public Safety Bldg.	Goshen Hill Rd	Lebanon	CT	06249
Ledyard PHNS	Ledyard WCC	741 Col Ledyard Hwy	Ledyard	CT	06339
VNA and Community Care	Madison WCC	560 Durham Rd	Madison	CT	06443
Visiting Nurse & Home Care	Manchester WCC	585 East Ctr St	Manchester	CT	06404
VNA of South Central CT	VNA of SC CT WCC	2051 Bridgeport Ave	Milford	CT	06460
Visiting Nurse & Home Care	New Britain WCC	100 Grand St	New Britain	CT	06050
Visiting Nurse & Home Care	New Britain WCC	147 West Main St	New Britain	CT	06052
New Milford VNA	New Milford WCC	68 Park La Rd	New Milford	CT	06776
Visiting Nurse & Homecare	Northwest	131 Route 202	NewPreston	CT	06777
Danbury VNA, Inc	Newtown WCC.	Riverside Rd	Newtown	CT	06482
Old Lyme VNA, Inc	Old Lyme WCC	52 Lyme St	Old Lyme	CT	06371
VNA of Ridgefield, Inc	Ridgefield WCC	90 East Ridge	Ridgefield	CT	06877
Salisbury PHNA, Inc	Salisbury PHNA, Inc	30A Salmon Kill	Salisbury	CT	06068
VNA Farmington Valley, Inc	Simsbury WCC	8 Old Mill La	Simsbury	CT	06070
Visiting Nurse & Community Care, Inc	So Windsor WCC	1790 Ellington Ave	So Windsor	CT	06074
Southington VNA, Inc	Southington WCC	8 Meriden Ave	Southington	CT	06489
Visiting Nurse & Community Care	Stafford Springs WCC	W Main & Church St	Stafford Springs	CT	06076
Trumbull PHNS	Trumbull WCC	4632 Madison Ave	Trumbull	CT	06611
Visiting Nurse & Community Care, Inc	Vernon WCC	Union & Elm St	Vernon	CT	06066
VNA of Wallingford, Inc	Wallingford WCC	701 Ctr St	Wallingford	CT	06492
PHNS, Inc	Waterford WCC	1000 Hartford Rd	Waterford	CT	06385
VNA Health at Home, Inc	Watertown WCC	27 Princeton Rd	Watertown	CT	06795
VNA of South Ctrl CT, Inc	VNA of SC CT, WCC	355 Main St	West Haven	CT	06516
Visiting Nurse & Comm. Hlth of Eastern CT, Inc	Willimantic WCC	132 Mansfield Ave	Willimantic	CT	06226
Visiting Nrse & Home Care	Windsor Locks WCC	50 Church St	Wind Locks	CT	06096



## SAFETY NET PROVIDERS REPORT

## APPENDIX F LOCAL HEALTH DEPTS AND HEALTH DISTRICTS

Local Health Dept	Director's Mailing Address	City	ST	Zip
Town of Andover	269 Church St.	Amston	CT	06231
Town of Hebron	269 Church St.	Amston	CT	06231
Farmington Valley Health Dist	50 Simsbury Rd	Avon	CT	06001
Town of Sprague	POB 677	Baltic	CT	06330
Berlin Health Dept	240 Kensington Rd	Berlin	CT	06037
Bethel Health Dept	1 School St	Bethel	CT	06801
East Shore Health Dist	29C Business Park Dr	Branford	CT	06405
Bridgeport Health Dept	752 East Main St	Bridgeport	CT	06608
Bristol-Burlington Health Dist	240 Stafford Ave	Bristol	CT	06010
Town of Brookfield	60 Old New Milford Rd	Brookfield	CT	06804
Northeast Dist Dept of Health	182 South Main St, POB 145	Brooklyn	CT	06234
Town of Canaan	7 Main St, POB 970	Canaan	CT	06018
Chesprocott Health Dist	1247 Highland Ave	Cheshire	CT	06410
Town of Chester	150 Main St	Chester	CT	06412
Town of Colchester	127 Norwich Ave, Suite 108	Colchester	CT	06415
Town of Salem	127 Norwich Ave, Suite 108	Colchester	CT	06415
Town of Cromwell	26 Shunpike Rd	Cromwell	CT	06416
Danbury Health & Housing Dept	20 West St	Danbury	CT	06810
Town of Redding	24 Hospital Ave	Danbury	CT	06810
Town of Darien	2 Renshaw Rd	Darien	CT	06820
Town of Durham	POB 428	Durham	CT	06422
East Hampton Health Dept	20 East High St	East Hampton	CT	06424
E Hartford Health Dept	740 Main St	E Hartford	CT	06108
Town of Easton	94 Burr St	Easton	CT	06612
North Central Health Dist	47 North Main St POB 1222	Enfield	CT	06083
Town of Somers	115 Elm St	Enfield	CT	06082
Town of Essex	One Wildwood Medical Ctr	Essex	CT	06426
Fairfield Health Dept	725 Old Post Rd	Fairfield	CT	06430
Glastonbury Health Dept	2155 Main St	Glastonbury	CT	06033
Greenwich Health Dept	101 Field Point Rd POB 2540	Greenwich	CT	06836
Borough of Stonington	Gold Star Office Park, Suite 120	Groton	CT	06340
Ledge Light Health Dist	1 Fort Hill Rd	Groton	CT	06340
Town of Stonington	Gold Star Office Park Suite 120	Groton	CT	06340
Town of Guilford	31 Park St	Guilford	CT	06437
Hartford Health Dept	131 Coventry St	Hartford	CT	06112
Town of Haddam	High St	Higganum	CT	06441
Borough of Jewett City	32 School St	Jewett City	CT	06351
Town of Griswold	32 School St	Jewett City	CT	06351
Town of Lisbon	32 School St	Jewett City	CT	06351
Town of Preston	32 School St	Jewett City	CT	06351
Town of Voluntown	32 School St	Jewett City	CT	06351
Town of Ledyard	743 Col Ledyard Hwy	Ledyard	CT	06339
Borough of Fenwick	22 Cove Rd	Lyme	CT	06371
Town of Old Saybrook	22 Cove Rd	Lyme	CT	06371
Madison Health Dept	Campus Dr	Madison	CT	06443
Town of Clinton	1353 Boston Post Rd	Madison	CT	06443
Town of Killingworth	1353 Boston Post Rd	Madison	CT	06443
Manchester Health Dept	479 Main St POB 191	Manchester	CT	06045
Eastern Highlands Health Dist	4 South Eagleville Rd	Mansfield	CT	06268
Town of Columbia	10 Higgins Highway - Suite 4	Mansfield Ctr	CT	06250
Town of Lebanon	10 Higgins Highway Suite 4	Mansfield Ctr	CT	06250
Town of Marlborough	Independence Dr POB 269	Marlborough	CT	06447
Meriden Dept of HHS	165 Miller St	Meriden	CT	06450
Town of Middlebury	White Deer Rock Rd	Middlebury	CT	06762
Town of Middlefield	405-1 Main St	Middlefield	CT	06455
Middletown Health Dept	245 DeKoven Dr	Middletown	CT	06457

Local Health Dept	Director's Mailing Address	City	ST	Zip
Town of Deep River	520 Saybrook Rd	Middletown	CT	06457
Borough of Woodmont	2051 Bridgeport Ave	Milford	CT	06460
Milford Health Dept	2051 Bridgeport Ave	Milford	CT	06460
Town of Monroe	838 Main St	Monroe	CT	06468
New Britain Health Dept	31 High St	New Britain	CT	06051
Town of New Canaan	11 Garibaldi La	New Canaan	CT	06840
New Fairfield Health Dept	4 Brush Hill Rd	New Fairfield	CT	06812
New Haven Health Dept	54 Meadow St 9th Floor	New Haven	CT	06519
New London Health Dept	120 Broad St	New London	CT	06320
Town of Waterford	488 Montauk Ave	New London	CT	06320
New Milford Health Dept	10 Main St	New Milford	CT	06776
Town of Bridgewater	41 South Main St	New Milford	CT	06776
Town of Roxbury	41 South Main St	New Milford	CT	06776
Town of Newington	Town Hall, 131 Cedar St	Newington	CT	06111
Newtown Health Dist	3 Main St	Newtown	CT	06470
Town of East Lyme	22 West Main St	Niantic	CT	06357
Town of Lyme	22 West Main St	Niantic	CT	06357
Town of North Canaan	POB 817	North Canaan	CT	06018
Town of Franklin	7 Meetinghouse Hill Rd	North Franklin	CT	06254
Quinnipiack Valley Health Dist	1151 Hartford Turnpike	North Haven	CT	06473
Norwalk Health Dept	137-139 East Ave	Norwalk	CT	06851
Town of Bozrah	130 New London Turnpike	Norwich	CT	06360
Uncas Health Dist	401 West Thames St, #2301	Norwich	CT	06360
Town of Old Lyme	POB 160, 52 Lyme St.	Old Lyme	CT	06371
Town of Orange	525 Orange Ctr Rd	Orange	CT	06477
Town of Plainville	7 North Washington St POB 40	Plainville	CT	06062
Town of Portland	259 Main St	Portland	CT	06480
Town of Ridgefield	66 Prospect St	Ridgefield	CT	06877
Town of Scotland	Gager Hill Rd, Box 4	Scotland	CT	06264
Town of Sharon	Sharon Medical Arts Building	Sharon	CT	06069
Naugatuck Valley Health Dist	470 Howe St	Shelton	CT	06484
Town of Sherman	Mallory Town Hall, POB 39	Sherman	CT	06784
Town of East Haddam	90 Garnet La	So Windsor	CT	06074
Pomperaug Health Dist	800 Main St Suite 130	Southbury	CT	06488
Town of Southington	93 Main St	Southington	CT	06489
Stafford Health Dist	One Main St	Stafford Springs	CT	06076
Stamford Health Dept	888 Washington Blvd, 8th fl.	Stamford	CT	06901
Stratford Health Dept	2730 Main St	Stratford	CT	06497
Town of Plymouth	27 Main St	Terryville	CT	06786
Torrington Area Health Dist	1116 Litchfield St	Torrington	CT	06790
Town of Trumbull	4632 Madison Ave	Trumbull	CT	06611
Town of So Windsor	351 Merline Rd Suite 103	Vernon	CT	06066
Town of Tolland	351 Merline Rd Suite 103	Vernon	CT	06066
Town of Willington	351 Merline Rd, Suite 103	Vernon	CT	06066
Town of Wallingford	45 South Main St.	Wallingford	CT	06492
Town of Washington	1 Kirby Rd	Washington	CT	06793
Town of Bethany	171 Grandview Ave	Waterbury	CT	06708
Waterbury Health Dept	402 East Main St	Waterbury	CT	06702
W Htfd-Bloomfield Health Dist	50 South Main St	W Hartford	CT	06107
West Haven Health Dept	355 Main St	West Haven	CT	06516
Town of Westbrook	POB 502	Westbrook	CT	06498
Town of North Stonington	3 Crestview Dr	Westerly	RI	02891
Weston/Westport Health Dist	180 Bayberry La	Westport	CT	06880
Rocky Hill/Wethfld Health Dist	505 Silas Deane Highway	Wethersfield	CT	06109
Town of Chaplin	14 Quarry St	Willimantic	CT	06226
Wilton Health Dept	238 Danbury Rd	Wilton	CT	06897
Windsor Health Dept	Town Hall 275 Broad St	Windsor	CT	06095

## LOCAL HEALTH OUTPATIENT DEPTS

AN ASSESSMENT OF HEALTH STATUS AND HEALTH SERVICES

<b>Local Health Dept</b>	<b>Outpatient Dept</b>	<b>Address</b>	<b>City</b>	<b>ST</b>	<b>Zip</b>
Bridgeport Dept of Health	Blackham SBHC	425 Throme St	Bridgeport	CT	06606
Bridgeport Dept of Health	City Health Svcs of Bpt	752 East Main St	Bridgeport	CT	06606
Bridgeport Dept of Health	Columbus SBHC	275 George St	Bridgeport	CT	06608
Bridgeport Dept of Health	Eisenhower Health Ctr	263 Golden Hill St	Bridgeport	CT	06604
Bridgeport Dept of Health	Harding High School	1734 Central Ave.	Bridgeport	CT	06607
Bridgeport Dept of Health	JFK Campus Health Ctr	700 Palisades Parkway	Bridgeport	CT	06608
Bridgeport Dept of Health	Luis Munoz Marin School	479 Helen St	Bridgeport	CT	06608
Bridgeport Dept of Health	No. End Clinic	1381 Reservoir Ave	Bridgeport	CT	06606
Bridgeport Dept of Health	Read Elem. SBHC	130 Ezra St	Bridgeport	CT	06608
Bridgeport Dept of Health	Roosevelt SBHC	680 Park Ave	Bridgeport	CT	06604
Bridgeport Dept of Health	Central High School	1 Lincoln Blvd.	Bridgeport	CT	06606
Quinnipiack Valley Health Dist	Hamden High School	2040 Dixwell Ave	Hamden	CT	06514
Hartford Health Dept	Burgdorf Ctr.	80 Coventry St	Hartford	CT	06112
New Britain Health Dept	New Britain Health Dept	31 High St	New Britain	CT	06051
New Haven Health Dept	K. Brennan School	200 Wilmot Rd	New Haven	CT	06515
New Haven Health Dept	New Haven Health Dept	54 Meadow St	New Haven	CT	06519
Stratford Health Dept	Wooster Middle SBHC	150 Lincoln St	Stratford	CT	06497
Waterbury Health Dept	Tri Project Health Van	232 N. Elm St	Waterbury	CT	06702
Waterbury Health Dept	Wtby Health Dept	402 E. Main St	Waterbury	CT	06702
West Haven Health Dept	Allington Sr. Ctr	One Forest Rd	West Haven	CT	06516
West Haven Health Dept	J Prete Senior Housing	1187 Campbell Ave	West Haven	CT	06516
West Haven Health Dept	Morrissey Manor Housing	Bayshore Dr	West Haven	CT	06516
West Haven Health Dept	Surfside Housing	200 Oak St	West Haven	CT	06516
West Haven Dept of Health	West Haven Health	355 Main St	West Haven	CT	06516

## SAFETY NET PROVIDERS REPORT

## APPENDIX G LOCAL HEALTH PROVISION OF CORE PUBLIC HEALTH FUNCTIONS

**Healthy People and Healthy CT Priority Area:** Educational and Community-Based Program.

**Objective Number 8.14:** Increase to at least 90 percent the proportion of people who are served by a local health department that is effectively carrying out the core functions of public health.

**Rationale:** The Institute of Medicine Report *The Future of Public Health* defined necessary steps to strengthen the public health system. The desired outcome is a public health system effectively performing the core functions identified as assessment, policy development and assurance.

Objective Parameters	US Baseline	US Yr. 2000 Target	CT Baseline	CT Yr. 2000 Target
<i>I. Assessment activities</i>				
<i>A. Data collection/analysis</i>				
1. Behavioral risk assessment	33%	90%	20.0%	100%
2. Morbidity data	49	90	34.3	100
3. Reportable diseases	87	90	90.0	100
4. Vital records and statistics	64	90	25.7	100
<i>B. Epidemiology/surveillance</i>				
1. Chronic diseases	54	90	31.4	100
2. Communicable diseases	91	90	87.1	100
<i>II. Policy development</i>				
<i>A. Health code development and enforcement</i>	59	90	82.9	100
<i>B. Health planning</i>	57	90	50.0	100
<i>C. Priority setting</i>	51	90	42.9	100
<i>III. Assurance activities</i>				
<i>A. Inspection</i>				
1. Food and milk control	72	90	82.9	100
2. Health facility safety/quality	47	90	45.7	100
3. Recreation facility safety/quality	54	90	65.7	100
4. Other facility safety/quality	32	90	45.7	100
<i>B. Licensing</i>		90		
1. Health facilities	22	90	24.3	100
2. Other facilities	71	90	87.1	100
<i>C. Health education</i>	74	90	61.4	100
<i>D. Environmental</i>				
1. Air quality	33	90	37.1	100
2. Hazardous waste management	46	90	61.4	100
3. Individual water supply/safety	77	90	81.4	100
4. Noise pollution	20	90	35.7	100
5. Occupational health and safety	23	90	32.9	100
6. Public water supply safety	58	90	48.6	100
7. Radiation control	21	90	28.6	100
8. Sewage disposal systems	79	90	94.3	100
9. Solid waste management	55	90	44.3	100
10. Vector and animal control	70	90	60.0	100
11. Water pollution	60	90	87.1	100

AN ASSESSMENT OF HEALTH STATUS AND HEALTH SERVICES

Objective Parameters	US Baseline	US Yr. 2000 Target	CT Baseline	CT Yr. 2000 Target
E. Personal health services	60	90		
1. AIDS testing and counseling	57	90	25.7	100
2. Alcohol abuse	16	90	11.4	100
3. Child health	84	90	48.6	100
4. Chronic diseases	69	90	31.4	100
5. Dental health	38	90	21.4	100
6. Drug abuse	17	90	15.7	100
7. Emergency medical services	13	90	22.9	100
8. Family planning	59	90	11.4	100
9. Handicapped children	47	90	11.4	100
10. Home health care	50	90	21.4	100
11. Hospitals	3	90		
12. Immunizations	92	90	75.7	100
13. Laboratory services	43	90	15.7	100
14. Long term care facilities	6	90	7.1	100
15. Mental health	14	90	15.7	100
16. Obstetrical care	20	90	5.7	100
17. Prenatal care	59	90	11.4	100
18. Primary care	22	90	7.1	100
19. Sexually transmitted diseases	73	90	47.1	100
20. Tuberculosis	81	90	45.7	100
21. WIC	69	90	25.7	100

Source of Data: U.S. Dept of Health and Human Services. Public Health Service. Centers for Disease Control, Atlanta, GA. *Profile of State and Territorial Public Health Systems: United States, 1990*. Public Health Program Office Publication, 1991. Data is limited due to self reporting by local health departments.

# APPENDIX H

## HEDIS MEASURES

The Health Plan Employer Data and Information Set, *HEDIS 3.0*<sup>18</sup>, builds on the earlier versions for both the commercial (HEDIS 2.5) and Medicaid populations.<sup>19</sup> Notable changes include the addition of more outcome measures, a standardized satisfaction survey, more measures related to high prevalence diseases, the addition of a testing set, and the integration of public and private reporting requirements.

### HEDIS 3.0 Reporting and Testing Set Measures

<b><i>Effectiveness of Care</i></b>	<b><i>Access/Availability of Care</i></b>
<b><i>Reporting Set</i></b>	<b><i>Reporting Set</i></b>
Childhood Immunization Status	Adults' Access to Prevention/Ambulatory Services
Adolescent Immunization Status	Children's Access to Primary Care Providers
Advising Smokers to Quit	Availability of Primary Care Providers
Flu Shots for Older Adults	Availability of Obstetrical and Prenatal Care
Breast Cancer Screening	Initiation of Prenatal Care
Cervical Cancer Screening	Low Birthweight Deliveries at Facilities for High-Risk Deliveries & Neonates
Check-ups After Delivery	Annual Dental Visit
Treating Children's Ear Infections	Availability of Dentists
Beta Blocker Treatment After a Heart Attack	Availability of Language Interpretation Services
Eye Exams for People with Diabetes	<b><i>Testing Set - Problems with Obtaining Care</i></b>
The Health of Seniors	<b><i>Satisfaction with the Experience of Care</i></b>
Follow-up after Hospitalization for Mental Illness	<b><i>Reporting Set</i></b>
<b><i>Testing Set</i></b>	Satisfaction Survey
Substance Counseling for Adolescents	Descriptive Information
Number of People in the Plan Who Smoke	<b><i>Testing Set</i></b>
Smokers Who Quit	Consumer Assessments of Health Plans Study
Flu Shots for High-Risk Adults	Disenrollment Survey
Stage at which Breast Cancer was Detected	Satisfaction with Breast Cancer Treatment
Chlamydia Screening	<b><i>Health Plan Stability</i></b>
Colorectal Cancer Screening	<b><i>Reporting Set</i></b>
Aspirin Treatment after a Heart Attack	Disenrollment
Follow-up after an Abnormal Pap Smear	Provider Turnover
Follow-up after an Abnormal Mammogram	Years in Business/Total Membership
Use of Appropriate Medications for People with Asthma	Indicators of Financial Stability
Prevention of Stroke in People with Atrial Fibrillation	Narrative Information on Race Trends, Financial Stability and Insolvency Protection
Monitoring Diabetes Patients	<b><i>Cost of Care</i></b>
Outpatient Care of Patients Hospitalized for Heart Failure	<b><i>Reporting Set</i></b>
Cholesterol Management of Patients Hospitalized for Coronary Artery Disease	Rate Trends
Controlling High Blood Pressure	High-Occurrence/High Cost DRGs
Assessment of How Breast Cancer Therapy Affects the Patient's Ability to Function	<b><i>Testing Set - Health Plan Costs Per Member Per Month</i></b>
Failure of Substance Abuse Treatment	<b><i>Use of Services</i></b>
Screening for Chemical Dependency	<b><i>Reporting Set</i></b>
Continuity of Care for Substance Abuse Patients	Frequency of Ongoing Prenatal Care
	Well-Child Visits in the First 15 Months of Life

<sup>18</sup> National Committee for Quality Assurance. *HEDIS 3.0 - Health Plan Employer Data and Information Set*. Washington, D.C: 1997.

<sup>19</sup> National Committee for Quality Assurance. *HEDIS 3.0 Draft for Public Comment*. Washington, D.C. July, 1996:iii.

AN ASSESSMENT OF HEALTH STATUS AND HEALTH SERVICES

Prescription of Antibiotics for the Prevention of HIV-Related Pneumonia  
Continuation of Depression Treatment  
Availability of Medication Management and Psychotherapy for Patients with Schizophrenia  
Appropriate Use of Psychotherapeutic Medications  
Family Visits for Children aged 0-12  
Patient Satisfaction with Mental Health Care

**Health Plan Descriptive Information**

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*Reporting Set*

Board Certification/Residency Completion  
Provider Compensation

Physicians Under Capitation

Case Management  
Utilization Management

Risk Management Quality Assessment and Improvement

Recredentialing  
Preventive Care and Health Promotion  
Arrangements with Public Health, Educational and Social Service Organizations  
Pediatric Mental Health Network  
Chemical Dependency Services  
Family Planning Services  
Total Enrollment  
Enrollment by Payer (Member Years/Months)

Unduplicated Count of Medicaid Members  
Cultural Diversity of Medicaid Membership  
Weeks of Pregnancy at Time of Enrollment in Health Plan

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Well-Child Visits in the Third, Fourth, Fifth and Sixth Year of Life  
Adolescent Well-Care Visit  
Frequency of Selected Procedures

Inpatient Utilization - General Hospital/Acute Care Ambulatory Care  
Inpatient Utilization - Non-Acute Care  
Discharge and Average Length of Stay - Maternity Care Births and Average Length of Stay, Newborns  
Cesarean Section & Vaginal Birth/After Cesarean Rate  
Mental Health Utilization - Inpatient Discharge and Average Length of Stay  
Mental Health Utilization - % of Members Receiving Inpatient, Day/Night and Ambulatory Services  
Readmission for Specified Mental Health Disorders  
Chemical Dependency Utilization - Inpatient Discharges and Average Length of Stay  
Chemical Dependency Utilization - Percentage of Members Receiving Inpatient, Day/Night Care and Ambulatory Services  
Readmission for Chemical Dependency  
Outpatient Drug Utilization

*Testing Set*

Use of Behavioral Health Services

**Informed Health Care Choices**

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*Reporting Set*

New Member Orientation/Education  
Language Translation Services

*Testing Set -*

Counseling Women About Hormone Replacement Therapy

# APPENDIX I

## QUALITY ASSURANCE OVERSIGHT

### Comparison of Public Quality Assurance Oversight with a Model Quality Monitoring Program (9/97)

Elements of a Model Quality Assurance Program	HCFA Medicare Managed Care	HCFA QARI Medicaid Managed Care	CT Medicaid Managed Care	CT State Employee Health Plan	CT Public Act 97-99
Certificate of Authority	✓ <sup>a</sup>	✓	✓		
Provide Consumers with Info					
Plan's benefits/procedures	✓ <sup>b</sup>	✓	✓	✓	✓
Comparative Information	✓ <sup>b</sup>	✓	✓		✓
Monitor Grievance Procedures					
Internal	✓ <sup>c</sup>	✓	✓	✓	✓
External	✓	✓	✓		✓
Improve System Performance					
Require NCQA Accreditation					
HEDIS Reporting	✓	✓ <sup>d</sup>	✓ <sup>d</sup>		✓
Tracer Conditions	✓ <sup>e</sup>	✓	✓ <sup>f</sup>		
Consumer/Provider Surveys	✓ <sup>g</sup>	✓ <sup>g</sup>	✓ <sup>g</sup>	✓ <sup>g</sup>	
Promoting Public Health					
Community-Based measures	h				
Other Quality Activities Implemented					
Clinical Mandates	✓ <sup>i</sup>		✓	✓ <sup>j</sup>	✓ <sup>j</sup>
Regulation of Utilization Review			✓	✓	✓
Choice of Provider	✓ <sup>k</sup>	✓ <sup>k</sup>		✓ <sup>k</sup>	
Banning "Gag Clauses"	✓	✓	✓	✓	✓

Sources: HCFA Office of Managed Care, State Comptroller's Office, and the Connecticut Department of Social Services.

<sup>a</sup> HCFA does not issue a certificate of authority per se, but under its "HMO Qualification Program", HCFA personnel assess whether health plans meet Medicare standards similar to those for fee-for-service providers.

<sup>b</sup> HCFA has announced a consumer information program to provide beneficiaries information to compare plans. The types of information will include basic benefit and cost comparisons, consumer satisfaction ratings, and performance indicators on flu shots, mammograms, etc. Comparisons on benefits and cost comparisons will be released in July, comparisons of performance measures by the end of the year, followed by the results of satisfaction surveys.

<sup>c</sup> HCFA specifies that each plan must specify an appeals process for beneficiaries. HCFA employs a medical peer review organization in each state to review complaints by beneficiaries involving the quality and denials of care. Members can appeal directly to the PRO.

<sup>d</sup> The HCFA Quality Assurance Reform Initiative recommends, but does not require, NCQA accreditation and HEDIS reporting. The CT Medicaid managed care program, which utilizes the QARI framework, also recommends NCQA accreditation and HEDIS reporting.

<sup>e</sup> The HCFA Diabetes Project is a pilot project to evaluate and improve diabetes care for Medicare beneficiaries. Using medical record review, the project has identified opportunities to improve care. Interventions to improve care have been developed and implemented and the last phase will evaluate the effectiveness of the interventions.

<sup>f</sup> CPRO will focus on three areas, beginning with pediatric asthma.

<sup>g</sup> Only consumers are surveyed.

<sup>h</sup> While HCFA has several public health improvement projects underway, participation by health plans is voluntary. Pneumonia/Flu 2000 promotes influenza and pneumonia vaccinations, and a Preventive Screening Services Project includes an office reminder intervention system that identifies patients in need of services, reinforces positive patient behavior, and provides feedback on practice performance).

<sup>i</sup> The Medicare program has only specified mandated length of stays for mastectomy procedures.

<sup>j</sup> In Connecticut, a clinical mandate exists for maternity and mastectomy hospital stays.

<sup>k</sup> Health plans in these programs offer "out-of-network" options for beneficiaries.

## APPENDIX J

### COMMUNITY BENEFIT GUIDELINES FOR HMOs

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#### Massachusetts Community Benefit Guidelines for Health Maintenance Organizations<sup>20</sup>

- The governing body of each HMO should adopt and make public a Community Benefits Policy Statement setting forth its commitment to a formal Community Benefits Program.
- The governing body and senior management of the HMO should be responsible for overseeing the development and implementation of the Community Benefits Program, the resources to be allocated, and the administrative mechanisms for the regular evaluation of the Program.
- The governing body and senior management of the HMO should seek assistance and participation from HMO members and the community in developing and implementing the HMO's Community Benefits Program, and in defining the targeted population and the specific health care needs to be addressed by the Community Benefits Program.
- Each HMO should develop its Community Benefits Program based upon an assessment of the health care needs and resources of the identified populations, particularly lower and moderate-income communities. The Program should consider the health care needs of a broad spectrum of age groups and health conditions.
- The HMO should develop and market products which would attract all segments of the population.
- The HMO should strive to offer and promote, consistent with existing laws and regulations, direct enrollment for non-group coverage and continue to work toward insurance market reform so that managed care will be an option for all working families and individuals.
- The HMO should take steps to reduce cultural, linguistic, and physical barriers to accessible health care at key points of patient contact.
- The HMO should strive to help Massachusetts consumers who are about to lose coverage or who are uninsured, to maintain or obtain, as applicable, health care coverage, at least for limited periods of time, at reduced or subsidized rates.
- The HMO should make an Annual Community Benefits Report available upon request to the public at the HMO and through the headquarters of the Massachusetts Association of HMOs (MAHMO), where the Report will also be available upon request to the public and to the Office of the Attorney General. The Report should describe the HMO's level of community benefits expenditures and describe the HMO's approach to establishing those expenditures.

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<sup>20</sup> State of Massachusetts, Attorney General's Office, February, 1996.

## APPENDIX K

### ACCESS TO HEALTH INSURANCE AND HEALTH CARE

#### HEALTH INSURANCE PORTABILITY AND ACCOUNTABILITY ACT

This Act is most generally referred to as the Kassebaum/Kennedy bill and was signed into law on August 21, 1996. Its provisions are designed to help individuals and families keep insurance when changing jobs by limiting preexisting condition exclusions, guarantee issue and renewability for small businesses, portability of insurance coverage for individuals leaving jobs, and increases in the tax deductibility of health insurance premiums for the self-employed.

States are required to reform their private insurance markets to comply with the law by July 1, 1997. Like welfare reform, states are given some flexibility in terms of shaping their program to meet the federal provisions. For example, existing state laws which are more stringent regarding guarantee issue or high risk pools will take precedence. For this reason, the impact of this legislation will vary widely across the nation.

**Table K- 1**  
**Provisions of the Health Insurance Portability and Accountability Act**

Main Provisions	Explanation
Pre-Existing Condition Exclusions	Under the law, insurers may only impose one 12 month exclusion period for any preexisting condition treated or diagnosed in the previous six months. A 12 month exclusion can never be imposed again on any employee who maintains continuous health coverage without a break for more than 62 days. Pregnancy cannot be considered a preexisting condition.
Group to Individual Portability	Under certain conditions, the law allows individuals to obtain health insurance if they leave their job and seek coverage in the individual market. To qualify, an individual must have been insured for 18 months or longer, covered under a group plan, have exhausted available COBRA coverage, and is not eligible for an employment based plan, Medicare, or Medicaid.
Guaranteed Issue and Renewability	This provision requires that insurers which sell policies to small businesses, must sell their products to all small businesses (defined as 2-50 employees). While the provision in a way guarantees access to insurance products for small businesses, it does not address limits on what insurers can charge so affordability is an issue. Additionally, the law bans insurers from dropping group coverage due to health status of the group's members.
Tax Deductibility for the Uninsured	Currently, the self employed can deduct 30% of their health insurance premiums from their income when filing federal tax returns. Under the Kassebaum/Kennedy bill, this is increased to 80% over a ten year period.
Other Provisions	Tax treatment of long term care insurance. The treatment of long term care insurance is designed to provide incentives for individuals and employers to purchase long term care insurance. Medical savings account demonstration program. The MSA demonstration will be available to 750,000 people for four years. The accounts will be used to pay for medical expenses by people with high deductible health insurance plans with tax deductible contributions by workers and employers.

Source: Families USA, Dec. 1996

#### UNCOMPENSATED CARE PROGRAM

Connecticut ensures, by statute, that emergency health care services are provided by hospitals regardless of an individual's ability to pay. Uncompensated care is generally defined as a hospital's bad debt (uncollected amounts for services for which the hospital is expected to receive payment) and free care (services to the indigent provided at either a reduced rate or free of charge). Hospitals incur unreimbursed costs from uncompensated care and government underpayments for publicly insured clients. Hospitals may offset these costs through higher charges to private payers or "cost shifting". Depending upon a hospital's

case-mix, cost-shifting can put it at a competitive disadvantage for paying patients. The broader implication is that cost control techniques used by the public sector which limit payments, can have a limited effect on total health spending due to the cost-shift phenomenon.<sup>21</sup>

In order to level the playing field and address the cost-shifting issue, the state established the uncompensated care program in 1991 for all its acute care general hospitals. In addition, the program allowed the State to take advantage of a 1991 federal amendment to obtain federal matching payments on provider taxes. The program is funded by a 9.25% tax on hospital gross earnings and according to current state law, will decrease by 1% each fiscal year until 1999. The amount of uncompensated care varies among Connecticut's 34 acute care general hospitals and depends upon community demographics, the availability of health care programs offered to needy populations in a community, and the enforcement of hospital collections. The majority of uncompensated care is provided by urban hospitals.<sup>22</sup> In total, uncompensated care has generally risen since FY 1994 and accounts for about 4% of hospital gross revenues on average.<sup>23</sup>

Since the money received by hospitals is not paid on a claims basis, it is not entirely certain how much of this money pays specifically for services to the uninsured and underinsured. OHCA, responsible for administration of the program, estimates about 65% of gross uncompensated care is attributed to services for the uninsured.<sup>24</sup> On the national level, estimates of uncompensated care vary greatly. The American Hospital Association estimated that hospitals provided over \$13 billion in uncompensated care in 1991 while the Congressional Budget Office estimated the value at \$25 billion. A study done by Long and Marquis, estimated the cost of care for uninsured individuals at \$40.6 billion in 1993.

While the program helps maintain financial stability for the state's hospital infrastructure, funding health services for the uninsured through this mechanism does not encourage the use of primary and preventive care and it also perpetuates the use of higher cost hospital emergency rooms. Coordination and continuity of care is also a problem with this system as each patient encounter may be with a different provider. For this reason as well as for fiscal considerations, many states have shifted from uncompensated care pools to insurance-based approaches. Thirty-six states have programs that target uninsured adults or children that do not qualify for Medicaid. Of these, fifteen use insurance subsidy programs which may be financed by managed care savings, diverted pool funds, and cigarette or other taxes.<sup>25</sup>

Welfare Reform

Enacted in August, 1996, the Personal Responsibility and Work Opportunity Act of 1996 (PRA) will begin implementation by states in 1997. The law includes several provisions which will effect financial support and access to health services for Connecticut's most vulnerable citizens. The major health-related provisions are summarized in the table below.

**Table K- 2  
Health Related Provisions of PRA**

Population Affected	New Provision Under HR 3737
Medicaid AFDC Recipients	Replaces AFDC program with Temporary Assistance to Needy Families block grant. <ul style="list-style-type: none"> <li>■ States now receive a finite amount of money to cover eligibles. Assistance can no longer be guaranteed to all who are eligible.</li> <li>■ Cash assistance recipients are no longer automatically enrolled in Medicaid.</li> </ul>
Immigrants	Legal immigrants entering the country after Aug. 22, 1996 remain ineligible for any federal means-tested public benefit for a period of five years from the date of entry into the country. Supplemental Security Income is reinstated for legal immigrants under certain guidelines.

<sup>21</sup> Congressional Budget Office. Responses to Uncompensated Care and Public-Program Controls on Spending: Do Hospitals Cost Shift? Washington, D.C. 1993.

<sup>22</sup> Connecticut Office of Health Care Access. Report on the Financial Stability of Connecticut's Short-Term Acute Care General Hospitals in a Competitive Market., Hartford, CT. 1996.

<sup>23</sup> Connecticut Office of Health Care Access. Uncompensated Care Analysis for FY 1997 (Schedule E). Hartford, CT. 1998.

<sup>24</sup> Connecticut Office of Health Care Access. Uncompensated Care Analysis for Year Ending September 30, 1996. Hartford, CT. 1997.

<sup>25</sup> Alpha Center. State programs to expand coverage reach more than a million people. State Initiatives in Health Care Reform. 1996 Oct;(20):1-4.

Family and Child Nutrition	<ul style="list-style-type: none"> <li>■ Changes to the food stamp program is expected to account for half of the total savings the new law will achieve. Legal immigrants and employable individuals between 18-50 who are not caring for children will be most affected.<sup>26</sup></li> <li>■ Some restrictions placed on the WIC program through the TANF block grant include removing funding for outreach and materials, prohibiting WIC benefits to incarcerated women, and requiring citizenship to receive WIC.<sup>27</sup></li> </ul>
Supplemental Security Income	Establishes a new definition of childhood disability which does not include benefits for emotional or developmental delays. SSI is now limited to children who are determined to have a physical or mental impairment resulting in severe functional limitation.
Teenage Pregnancy	The law allocates more money for teenage abstinence education and establishes national goals to prevent teenage pregnancies out of wedlock by requiring at least 25% of communities in the U.S. to have teenage pregnancy programs in place by 1/1/97. <sup>28</sup>

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States have some flexibility in revising their program to be consistent with the law. Connecticut has initiated changes to its welfare program to comply with the federal law through Public Act 97-2 of the June Special Session. To address the potential loss of Medicaid benefits, it maintains current law of a two year Medicaid extension for families that lose welfare benefits while employed and other families under guidelines. It also extends Medicaid eligibility to children under the age of 19 and up to 185% of poverty and allows eligibility to Medicaid for qualified aliens under certain guidelines.<sup>29</sup> Even with these changes, there is concern over the effects of this reform initiative and its potential to create more uninsured citizens that could cause an increasing strain of safety-net providers.

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<sup>26</sup> *The New Welfare Law: Issues and Options for Connecticut, 1997*. Edited and compiled by the Legal Assistance Resource Center of Connecticut and the Center on Budget and Policy Priorities. Washington, D.C. 1997.

<sup>27</sup> Mullins C, Sementilli-Dann, L. *Federal Welfare Reform and Maternal and Child Health in Connecticut*. CAHS. 1996.

<sup>28</sup> Mullins and Sementilli-Dann, p. 7.

<sup>29</sup> Connecticut Office of Legislative Research. *Amended Bill Analysis for Public Act 97-2*. Hartford, CT. 1997.

# APPENDIX L

## CAUSES OF HOSPITALIZATION

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**Causes of Hospitalization  
Category Descriptions<sup>a</sup>**

Category Description	Coding Definition
Heart Disease	390-398, 402, 404-429
Digestive System Disorders	530-579
Mental Health	290-319
Alcohol/Drug Abuse or Dependence	291-292, 302-305
Cancer	140-239
Injuries	800-959
Pneumonia	480-486
Cerebrovascular Disease	430-438
Chronic Obstructive Pulmonary Disease	490-496
Asthma	493
Infectious & Parasitic Diseases	001-139
Septicemia	038
HIV/AIDS	042-044
Diabetes	250
Central Nervous System Disorders	320-336, 340-349
Birth-related	
Mothers	DRGs 370-384
Infants	DRGs 385-391
Other	All Other Not Included in Above

<sup>a</sup> The first three digits ICD-9-CM code of the Principal Diagnosis were used unless otherwise specified.

# APPENDIX M

## ACUTE CARE PROJECTION METHODOLOGY<sup>30</sup>

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### DATA SOURCES AND DATA ELEMENTS

Hospital data submitted in the Annual Reporting Schedule 500 reports to the Connecticut Office of Health Care Access (OHCA) were utilized to determine the current inventory and capacity of acute care facilities in the state. In order to develop detailed utilization rates, however, data records from OHCA's hospital discharge abstract and billing data base were used. These records include information such as patient age, patient gender, town of residence, patient days, hospital, and one of six assigned services: (1) newborn; (2) maternity; (3) psychiatric; (4) rehabilitation; (5) pediatric; and (6) adult medical/surgical.

These services were expanded to include the intensive care unit/critical care unit (ICU/CCU) and neonatal ICU (NICU) services. To obtain utilization data on these services, revenue code data from the hospital discharge abstract and billing data base were used. Revenue codes that apply to ICU/CCU and NICU services were identified as were the respective patient days. The days associated with the original six services were then reduced by the number of days assigned to the two additional services to avoid duplication. The days designated as "Post ICU" and "Post CCU" were also identified by their revenue codes. They represent days intermediate between ICU/CCU and medical/surgical. Because no separate beds for these services are reported in the Schedule 500 reports, these step-down days were assigned to the medical/surgical service for analysis purposes.

The two sources of data on acute care utilization basically provide similar information regarding patient days by hospital. However, there are discrepancies at the service level. Discharge data were used to extract hospital days by service because this data base also provides the patient town-of-residence data needed to calculate the utilization rates within USRs. The Schedule 500 Reports were used to extract information pertaining to hospital beds and their occupancy. Some of the bed data was modified to reflect more accurate data found in "Attachment 16-17-18" of a hospital's Annual Reporting to OHCA or provided by the DPH Licensure Unit.

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<sup>30</sup> This methodology is similar to that previously used by Arthur D. Little, Inc. in their June 11, 1993 report to the State of Connecticut, Commission on Hospitals and Health Care, entitled *Assessment of Current Health Care Facilities and Future Requirements*.

## UTILIZATION RATES

Using the discharge data, current statewide utilization rates were calculated for all services by patient gender and the following age groups:

- 0 - 4 years
- 5 - 19 years
- 20 - 44 years
- 45 - 64 years
- 65+ years

## POPULATION PROJECTIONS

Connecticut's OPM population projections were used to estimate the Connecticut population by age and sex for April 1995, 2000, and 2005. (April is the midpoint of the federal fiscal year.) Population data as of April were calculated using interpolation of OPM's July estimates.

Connecticut's population is projected to increase by 0.8% from 1995 to 2000 and 1.4% from 2000 to 2005. That is, the population of Connecticut is projected to be virtually static for the period 1990 to 2000 with a slight increase in the beginning of the twenty-first century. Most notable is the increase in the 45-64 age group -- 12% between 1995 and 2000 and 14% between 2000 and 2005. Also of significance is the fact that the over-75 segment of the population will increase by 12% from 1995 to 2000 and 6.2% from 2000 to 2005. This latter group in particular has significance for medical service requirements because they are major users of acute care services.

## PROJECTED UTILIZATION AND BED NEED

Utilization rates were multiplied by the projected population cohorts for the years 2000 and 2005 by USR to obtain the expected number of patient days for each USR in the years 2000 and 2005. This assumes that 1995 acute care utilization rates will not change over time. The average daily census by USR and service was then obtained by dividing the patient days by 365.

The projections were then adjusted for out-of-state resident utilization. Discharges, whose zip codes were invalid but which resemble a Connecticut zip code by having a prefix "06," were also included in this adjustment. The out-of-state patient days were allocated to each USR and service according to the location of the hospital from which the patients were discharged. The out-of-state adjustment is the percentage of the "out-of-state patient days" to the "Connecticut residents' patient days" for each USR and service. This adjustment was then applied to the projected average daily census to produce the target daily census. Adjustments assume that 1995 percentages for out-of-state utilization, by service and USR, will prevail in the future.

The target census projections were then adjusted for "target occupancies" to arrive at year-2000 and 2005 estimates of bed need by service, within USR, and for the total state. Target occupancy adjustments are necessary to account for the daily fluctuations that occur in the use of hospital beds. That is, hospitals must provide additional bed capacity over their average census to handle the random fluctuations in their day-to-day census.

To develop a final projected bed need, the year 2000 and 2005 estimates were adjusted for potential changes in service delivery and other factors that might affect future acute care bed utilization.

## ANALYTIC FORMULATION OF PROJECTION METHODOLOGY

Subscript notation is as follows:

$i$  = USR  
 $j$  = age group  
 $k$  = gender  
 $l$  = medical service

Statewide patient days by age-gender cohort for each service is denoted by:  $D_{jkl}$

Current statewide population by age-gender cohort is:  $P_{jk}$

Projected USR population (i.e., summed over towns in the USR) is:  $P'_{ijk}$

Projected patient days by USR are calculated as:

$$D'_{ii} = \sum_{jk} \frac{D_{jkl}}{P_{jk}} P'_{ijk}$$

The statewide projected utilization by service is:

$$D'_i = \sum_i D'_{ii} = \sum_{ijk} \frac{D_{jkl}}{P_{jk}} P'_{ijk}$$

Average Daily Census by USR and service becomes:

$$ADC_{ii} = \frac{D'_{ii}}{365}$$

Out of state patients (including those whose town of residence is "Unknown CT") are assigned to a USR according to the USR location of the hospital from which the patients are discharged. Patient days are then summed by USR within service. It is denoted by  $OOSD_{ii}$ . The adjustment becomes:

$$ADJ_{ii} = \frac{OOSD_{ii}}{D_{ii}}$$

where  $D_{ii}$  represents the patient days of Connecticut residents only within USR and service. Target Daily Census is Average Daily Census adjusted for the out of state patient usage.

$$TDC_{ii} = ADC_{ii} (1 + ADJ_{ii})$$

Target Occupancy (TO) is the daily occupancy needed to account for the intrinsic random nature of hospital patient visits. The detailed discussion of the calculation of TO follows below. The number of beds needed is:  $B_{ii} = TDC_{ii}/TO_{ii}$

### Target Occupancy

The following formula was used to calculate a "target occupancy" on a service-by-service basis:

$$\text{Target Occupancy} = \frac{N}{N + 2\sqrt{N}}$$

Where:  $N$  = Average expected census in the unit  
 $\sqrt{N}$  = Standard deviation of unit census, assuming random arrival of patients and therefore a "Poisson" distribution of census  
 $2\sqrt{N}$  = Additional beds required to handle fluctuation in daily census approximately 98% of the time.

This equation is based on a Poisson probability distribution. The Poisson process is appropriate for processes with approximately random arrivals and occupancies, and has the statistical advantage of being a single-parameter probability distribution (the standard deviation is equal to the square root of the mean). As a result, additional assumptions do not have to be made about the standard deviation. In previous hospital-based work, health care researchers such as Arthur D. Little, have found the Poisson to be a good probability distribution to describe the occupancy distribution in short length-of-stay units.

The "target occupancy adjustment" reflects the variation in the daily occupancy of beds for each hospital in a USR for a particular service. It is obtained in the following way. The projected average daily census is the average number of beds projected to be needed for the USR and service. Because of the daily

fluctuations in the occupancy of beds, the actual number of beds needed could be less than or greater than the average census. The fluctuation of the need for hospital beds happens at the hospital level, not at the USR level, because the USR itself does not have a single regional hospital. Therefore, the projected average daily census by USR needs to be divided by the total number of hospitals that provide the service in that USR to obtain the base need for beds at a hospital. Although in reality, not all the hospitals in the USR are of the same size, the method is valid for projection purposes. The base need for beds in each hospital is assumed to be the mean, and denoted by  $\mathbf{N}$ . The Poisson probability distribution is used to predict the daily fluctuation in the demand of hospital beds. The ratio  $\frac{\mathbf{N}}{\mathbf{N}+2\sqrt{\mathbf{N}}}$  is used as the indication of daily occupancy regarding the fluctuation for the hospitals in the USR for the service.

This formula results in a target occupancy of about 90 percent for a large service with an average census of 200, compared with an occupancy of about 70 percent for a service with an average census of 20.

## APPENDIX N

## ABBREVIATIONS USED IN TEXT

Abbreviations	Meaning
<b>A</b>	
AAMR	Age-Adjusted Mortality Rates
AAP	American Academy of Pediatrics
ADL	Activities of Daily Living
ADS	Alternative Delivery Systems
AFDC	Aid to Families with Dependent Children
AIDS	Acquired Immunodeficiency Syndrome
ALOS	Average Length of Stay
APN	Advanced Practice Nurse
ASO	Administrative Services Only
APP/YPP	Adolescent Pregnancy Prevention/Young Parents' Program
AZT	Azidothymidine (Zidovudine - Anti-viral agent)
<b>B</b>	
BAC	Blood Alcohol Concentration
BBDT	Baby Bottle Tooth Decay
BCH	DPH Bureau of Community Health
BDMP	Birth Defects Monitoring Program
BMI	Body Mass Index
BNH	Black-non-Hispanic
BOC	U.S. Bureau of the Census
BRFSS	Behavioral Risk Factor Surveillance System
BRS	DPH Bureau of Regulatory Services
<b>C</b>	
CAES	Connecticut Agricultural Experiment Station
CBCCEDP	Connecticut Breast and Cervical Cancer Early Detection Program
CCNH	Chronic and Convalescent Nursing Homes
CCU	Critical Care Unit
CDC	Centers for Disease Control and Prevention
CGS	Connecticut General Statutes
CHC	Community Health Centers
CHCP	Connecticut Home Care Program
CHD	Chronic Heart Disease
CIRTS	Connecticut Immunization Registry and Tracking System
CLPPP	Connecticut Lead Poisoning Prevention Program
CLPSC	Connecticut Lead Poisoning Screening Committee
CNS	Central Nervous System
CON	Certificate of Need
COGME	Council on Graduate Medical Education
COPD	Chronic Obstructive Pulmonary Disease
CPLTC	Connecticut Partnership for Long Term Care
CPI	Consumer Price Index
CPR	Cardio-Pulmonary Resuscitation
CPRO	Connecticut Peer Review Organization

AN ASSESSMENT OF HEALTH STATUS AND HEALTH SERVICES

Abbreviations	Meaning
CPWS	Community Public Water Supplies
CVD	Cardiovascular Disease
<b>D</b>	
DCF	Connecticut Department of Children and Families
DEP	Connecticut Department of Environmental Protection
DHHS	U.S. Department of Health and Human Services
DMHAS	Connecticut Department of Mental Health and Addiction Services
DMR	Connecticut Department of Mental Retardation
DOC	Connecticut Department of Corrections
DOI	Connecticut Department of Insurance
DPH	Connecticut Department of Public Health
DRG	Diagnostic Related Group
DRSP	Drug-resistant <i>Streptococcus pneumoniae</i>
DSS	Connecticut Department of Social Services
DUI	Driving Under the Influence
DWSRF	Drinking Water State Revolving Fund
<b>E</b>	
EBRI	Employee Benefit Research Institute
EEOH	DPH Division on Environmental Epidemiology and Occupational Health
EMS	Emergency Medical Services
EPA	U.S. Environmental Protection Agency
EPO	Exclusive Provider Organization
EPSDT	Early Periodic Screening, Diagnosis, and Treatment Program
ESRD	End Stage Renal Disease
ETS	Environmental Tobacco Smoke
<b>F</b>	
FAS	Fetal Alcohol Syndrome
FDA	U.S. Food and Drug Administration
FY	Fiscal Year
FFY	Federal Fiscal Year
FPP	Food Protection Program
FTE	Full-time Equivalent
<b>G</b>	
GPRA	Government Performance and Results Act of 1993
<b>H</b>	
HAV	Hepatitis A Virus
HCFA	U.S. Health Care Financing Administration
HDL	High-density Lipoprotein
HEDIS	Health Plan Employer Data and Information Set
HCQIS	Health Care Quality Information System
HMO	Health Maintenance Organization
HIPAA	Health Insurance Portability and Accountability Act
HIV	Human Immunodeficiency Virus
HPSA	Health Professional Shortage Area
HUSKY	Healthcare for Uninsured Kids and Youth
<b>I</b>	
IADL	Instrumental Activities of Daily Living
ICU	Intensive Care Unit
IDU	Injection Drug Users
IGT	Impaired Glucose Tolerance
IMAP	Infant Mortality Action Plan
IOM	Institute of Medicine

Abbreviations	Meaning
IPA	Individual Practice Association
ISN	Integrated Service Networks
<b>J</b>	
JCAHO	Joint Commission on Accreditation of Health Care Organizations
<b>L</b>	
LEA	Lower Extremity Amputation
LDL	Low-density Lipoproteins
LHD	Local Health Department or District
LIS	Less Invasive Surgery
LRI	Lower Respiratory Infection
<b>M</b>	
MCH	Maternal and Child Health
MCO	Managed Care Organization
MDC	Major Diagnostic Categories
MIH	Maternal and Infant Health
MMC	Medicaid Managed Care
MMR	Mumps, Measles, and Rubella
MOA	Memorandum of Agreement
MQA	Medical Quality Assurance
MSAFP	Maternal Serum Alpha-Fetoprotein
MSM	Men who have Sex with Men
MSO	Management Service Organization
<b>N</b>	
NCHS	National Center for Health Statistics
NCI	National Cancer Institute
NCQA	National Committee for Quality Assurance
NHANES	National Health and Nutrition Examination Survey
NHIS	National Health Interview Study
NHLBI	National Heart Lung and Blood Institute
NICU	Neonatal Intensive Care Unit
NIS	National Immunization Survey
NNRTI	Non-nucleoside Reverse Transcriptase Inhibitors
NTD	Neural Tube Defect
NTNC	Non-transient Non-community System
<b>O</b>	
OEMS	DPH Office of Emergency Medical Services
OHCA	Connecticut Office of Health Care Access
OHSP	Occupational Health Surveillance Program
OPPE	DPH Office of Policy, Planning and Evaluation
OPM	Connecticut Office of Policy and Management
<b>P</b>	
P&S	Primary and Secondary Syphilis
PA	Physician's Assistant
PACE	Program for All-inclusive Care for the Elderly
PAH	Polyaromatic Hydrocarbons
PFD	Personal Flotation Device
PHHS	U.S. Preventive Health and Health Services
PHO	Physician Hospital Organization
PM	Particulate Matter
POS	Point of Service Plan
PPO	Preferred Provider Organization
PSO	Provider Sponsored Organization

AN ASSESSMENT OF HEALTH STATUS AND HEALTH SERVICES

Abbreviations	Meaning
<b>Q</b>	
QARI	Quality Assurance Reform Initiative
QISMC	Quality Improvement System for Managed Care
<b>R</b>	
RHNS	Rest Home with Nursing Supervision
<b>S</b>	
SEER	Surveillance, Epidemiology, and End Results
SES	Socio-economic Status
SBHC	School-based Health Center
SCBW	Survey of Childbearing Women
SFY	State Fiscal Year
SIR	Standard Incidence Ratios
STD	Sexually Transmitted Disease
<b>T</b>	
TB	Tuberculosis
TNC	Transient Non-community
<b>U</b>	
UCONN CES	University of Connecticut Cooperative Extension System
UR	Utilization Review
USPHS	U.S. Public Health Service
USR	Uniform Service Region
<b>W</b>	
WIC	DPH Special Supplemental Food Program for Women, Infants and Children
<b>Y</b>	
YPLL	Years of Potential Life Lost

# APPENDIX O

## GLOSSARY

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**Access** An individual's ability to obtain appropriate health care services. Barriers to access can be financial (insufficient monetary resources), geographic (distance to providers), organizational (lack of available providers) and sociological (e.g., discrimination, language barriers). Efforts to improve access often focus on providing or improving health coverage.

**Accessibility** The degree to which the health care system inhibits or facilitates the ability of an individual to gain entry and to receive services. Accessibility involves geographic, architectural, transportation, social, time, and economic consideration. It may be measured either by utilization, non-utilization or the relative strength and absence of barriers to utilization.

**Accreditation** A process whereby a program of study or an institution is recognized by an external body as meeting certain predetermined standards. For facilities, accreditation standards are usually defined in terms of physical plant, governing body, administration, and medical and other staff. Accreditation is often carried out by organizations created for the purpose of assuring the public of the quality of the accredited institution or program. State or Federal governments can recognize accreditation in lieu of, or as the basis for licensure or other mandatory approvals. Public or private payment programs often require accreditation as a condition of payment for covered services. Accreditation may either be permanent or may be given for a specified period of time.

**Acute Care** Medical treatment given to individuals whose illnesses or health problems are short-term (usually under 30 days) or episodic. Acute care facilities are those hospitals that mainly serve persons with short-term health problems.

**Adequacy of Prenatal Care** See Kessner Index.

**Administrative Services Only** A service requiring a third party to deliver administrative services to an employer group and requiring the employer to be at risk for the cost of health care services provided. This is a common arrangement when an employer sponsors a self-funded health care program.

**Affiliation** An agreement, usually formal, between two or more otherwise independent entities or individuals which defines how they will relate to each other. Affiliation agreements between hospitals may specify procedures for referring or transferring patients from one facility to another, joint faculty, and/or medical staff appointments, teaching relationships, sharing of records or services, or provision of consultation between programs.

**Age-adjusted Death Rate (Direct method)** A summary of age-specific death rates, applied to a standard population to calculate what rate would be expected if the selected population had the same distribution as the standard population. The total of expected deaths divided by the total of the standard population and multiplied by 100,000 yields the age-adjusted death rate per 100,000.

**Age-specific Rate** The number of events to individuals in a specific age group per 100,000 individuals in the population in the same age group.

**Alternative Delivery Systems** A catch-all phrase used to cover all forms of health care delivery except traditional fee-for-service, private practice. The term includes HMOs, PPOs, IPAs, and other systems of providing health care.

**Ambulatory Care** All types of health services that are provided on an outpatient basis, in contrast to services provided in the home or to persons who are inpatients. While many inpatients may be ambulatory, the term ambulatory care usually implies that the patient must travel to a location to receive services that do not require an overnight stay. See also "ambulatory setting" and "outpatient".

**Ambulatory Setting** A type of institutional organized health setting in which health services are provided on an outpatient basis. Ambulatory care settings may be either mobile (when the facility is capable of being moved to different locations) or fixed (when the person seeking care must travel to a fixed service site).

**Ambulatory Surgery Centers** Surgical facilities that provide outpatient (same day) surgery, including single and multi-specialty centers, and independent, corporate or hospital owned centers. Procedures performed in ambulatory surgical centers include ophthalmology, gynecology, gastroenterology, ear/nose/throat, orthopedics, general, reconstructive and cosmetic and podiatry.

**Ancillary Service** Diagnostic and therapeutic services generally provided by hospitals and consisting of specific departments such as x-ray and laboratory.

**Any Willing Provider** Laws that require managed care plans to contract with all health care providers that meet their terms and conditions.

**Appropriateness** Appropriate health care is when the expected health benefits exceeds the expected negative consequences by a wide enough margin to justify treatment.

**Assessment** A surveillance process for identifying public health threats and trends.

**Assurance** The pledge that necessary services, including personal health services for the protection of public health in the community will be available and accessible to all persons.

**Average Length of Stay** The average stay, in days, of inpatients in a given time period. This can be calculated by dividing the number of patient days by either the number of admissions or the number of discharges and death.

**Behavioral Risk Factors** Actions or habits (e.g., smoking, use of seat belts, exercise) that contribute to a person's health.

**Benchmark** A term meaning a measurement taken at the outset of a series of measurements of the same variable, sometimes meaning the best or most desirable value of the variable.

**Birthweight** The first weight of a fetus or infant at time of delivery. This weight is usually measured during the first hour of life, before postnatal weight loss occurs.

**Burden of Disease** A general term used in public health and epidemiological literature to identify the cumulative effect of a broad range of harmful disease consequences on a community, including the health, social, and economic costs to the individual and to society. Since the broad range of information is not consistently available for many of the conditions described in this report, measures of mortality were used in making comparative assessments of disease burden, allowing a contrast the variety of conditions using a common unit of measure.

**Capitation** A method of payment for health services in which an individual or institutional provider is paid a fixed amount for each person insured, regardless of actual use or expense. Capitation is the characteristic payment method for certain health maintenance organizations.

**Carve Out** An arrangement whereby an employer eliminates coverage for a specific category of services (e.g., vision care, mental health/psychological services, or prescription drugs) and contracts with a separate set of providers for those services according to a predetermined fee schedule or capitation arrangement. May also refer to a method of coordinating dual coverage for an individual.

**Case Mix** A measure of the types of cases being treated by a particular health care provider that is intended to reflect the patients' different needs for resources. Case mix is generally established by estimating the relative frequency of various types of patients seen by the provider during a given time period, and may be measured by factors such as diagnosis, severity of illness, utilization of services and provider characteristics.

**Cause of Death** The underlying cause of death determined to be the primary condition leading to death, based on the international rules and sequential procedure set forth for manual classification of the underlying causes of death by the National Center for Health Statistics and the World Health Organization (*International Classification of disease, Ninth Revision*). See also "Underlying cause of death".

**Certificate of Need** A certificate issued by a governmental body to an individual or organization proposing to construct, modify, or close a health facility, acquire major new medical equipment, modify a health facility, or offer a new or different health service or discontinue a service. Such issuance recognizes that a facility or service, when available, will meet the needs of those for whom it is intended. CON is intended to control expansion of facilities and services by preventing excessive or duplicative development of facilities and services.

**Chronic Care** Treatment and care given to individuals whose health problems are long term and continuing. Rehabilitation facilities, nursing homes, and mental hospitals may be considered chronic care facilities.

**Chronic Disease** A disease with one or more of the following characteristics: permanence, leaves residual disability, caused by non-reversible pathological alternation, requires special training of the patient for rehabilitation, or may require a long period of supervision, observation, or care.

**Continuum of Care** A comprehensive set of services ranging from preventive and ambulatory services to acute care to long term and rehabilitative services. By providing continuity of care, the continuum focuses on prevention and early intervention for those who have been identified as high risk and provides easy transition from service to service as needs change.

**Cost** The total level of economic investment required for the provision of health services. This level of investment includes all financial expenditures, especially expenditures for capital and operating requirements. Charges, the price of a service or amount billed to an individual or third party, may or may not be equal to service costs.

**Cost Containment** A wide variety of strategies or methods whose primary goal is to control the rising cost of health care, thus making health care more affordable. These strategies and methods may include, but are not limited to government regulation, managed care programs, payment policies, global budgets, rate setting, consumer education, and utilization management.

**Cost Sharing** Provisions in a health insurance plan that require the insured to pay some portion of the covered medical expenses. Typical forms of cost sharing include coinsurance, co-payments, and deductibles.

**Cost Shifting** The practice of increasing revenues from one type of payer (e.g., privately insured patients) in order to cover the costs of uncompensated care or other shortfalls in reimbursements from other payers.

**Crude Rate:** The number per 100,000 population. This rate should not be used for making comparisons between different populations when the age, race, and sex distributions of the populations are different.

**Demand** The amount of a given service sought by consumers in response to their perceived need for that service. Demand is influenced by availability of services, by accessibility of the service and by ability to pay for the service.

**Diagnostic Related Groups** A patient classification scheme that categorizes patients who are medically related with respect to diagnoses and treatment, and are statistically similar in their length of stay. The classification system is generally used to set uniform rates for the payment of hospital care. The DRG system was adopted by the Medicare program in 1983 to create incentives for hospitals to provide more cost-effective care.

**Direct Medical Services** Services delivered by a health professional to a patient in an office, clinic, or emergency room. Basic services include what most consider ordinary medical care, inpatient and outpatient medical services, allied health services, drugs, laboratory testing, x-ray services, dental care, and pharmaceutical products, and services.

**Disability** Any temporary or long term condition (physical and/or mental) that results from an acute or chronic condition that may prevent the performance of regular duties.

**Disease Burden** See Burden of Disease

**Disproportionate Share** A program that provides additional financial aid to hospitals having excessive numbers of indigent patients.

**Early and Periodic Screening Diagnosis and Treatment Program** A program mandated by law as part of the Medicaid program. The law (section 1905(a)(4)(B) of the Social Security Act) requires that all States have in effect a program for eligible children under age 21 to ascertain their physical or mental defects, and to provide such health care treatments, and other measures to correct or ameliorate defects and chronic conditions discovered.

**Emergency Medical Services** The services provided to accident victims and patients suffering from severe acute illness and psychiatric emergencies. Services include the detection and reporting of medical emergencies, initial care, transportation and care for patients in route to health care facilities, medical treatment for the acutely ill and severely injured within emergency departments, and the provision of linkages to continued care or rehabilitation services.

**Employee Retirement Income Security Act** A federal law enacted in 1974 that set minimum standards of information disclosure and fiduciary responsibilities in the establishment, operation, and administration of employee benefit plans, including group life, pensions, and health plans. Employers who operate their own insurance plans for employees, or "self-insure" under ERISA, are exempt from state insurance regulation.

**Environmental Health** Characteristics of health that result from the aggregate impact of both natural and man-made surroundings, including health effects of air pollution, water pollution, noise pollution, solid waste disposal, and housing; occupational disease and injuries; and those diseases related to unsanitary surroundings.

**Epidemiology** A branch of medical service that deals with the incidence, distribution, and control of disease in a population, or the sum of the factors controlling the presence or absence of a disease.

**Exclusive Provider Organization** An organization that provides coverage only for contracted providers.

**Fee-for-Service** A method of payment in which each service provided to the patients is associated with a corresponding fee to be paid to the provider. It is the method of billing used by the majority of U.S. physicians.

**Fetal Death** Death prior to the complete expulsion or extraction from the mother of a product of conception, which has passed through at least the 20th week of gestation. The fetus shows no signs of life such as heartbeat, pulsation of the umbilical cord, or movement of voluntary muscles.

**Freestanding** An independent facility without financial or administrative attachment or support from another facility.

**Gatekeeper** A healthcare professional, who coordinates, manages, and authorizes all healthcare services provided to a covered beneficiary. May be a nurse, a social worker, a physician's assistant, or a physician (e.g., internist, family/general

practitioner, pediatrician, and in some cases, OB/GYN). Gatekeepers are frequently used by managed care plans to control costs by limiting unnecessary utilization of services.

**Gestational Age** The number of completed weeks elapsed between the first day of the last normal menstrual period and the date of delivery.

**Group Model Health Maintenance Organization** A health care model involving contracts with physicians organized as a partnership, professional corporation, or other association. The health plan compensates the medical group for contracted services at a negotiated rate, and that group is responsible for compensating its physicians and contracting with hospitals for care of their patients.

**Group Practice** The provision of medical services by three or more physicians formally organized to provide medical care, consultation, diagnosis, and/or treatment through the joint use of equipment and personnel, and with income from the medical practice distributed in accordance with methods previously determined by members of the group. Group practices have a single-specialty or multi-specialty focus.

**Group Practice Without Walls** Typically a network of physicians who have formed a single legal entity, but maintain their individual practices. The assets of individual practices may be acquired by the larger entity, but some autonomy is retained at each site. The central management provides administrative support. See Integrated Delivery System.

**Health** A state of physical, mental, and social well-being and productive functioning, not merely the absence of disease or infirmity.

**Health Alliances or Regional Health Alliances** Purchasing pools responsible for negotiating health insurance arrangements for employers and/or employees. Alliances would use their leverage to negotiate contracts that would ensure care is delivered in economical and equitable ways. (Also referred to as health insurance purchasing cooperatives or health plan purchasing cooperatives.)

**Health Care Financing Administration** An agency of the U.S. Department of Health and Human Services responsible for administering the Medicare program and overseeing the administration of state Medicaid programs.

**Health Delivery System** A coordinated complex of resources, including manpower, facilities, equipment, etc. that provides health care to the populace of a given area.

**Health Education** A continuing process of informing people how to achieve and maintain good health; of motivating them to do so; and of promoting environmental and lifestyle changes to facilitate their objective.

**Health Maintenance Organization** An entity that provides, offers, or arranges for coverage of designated health services needed by plan members for a fixed, prepaid premium. There are four basic models of HMOs: group models, individual practice association, network model, and staff model. Under the Federal HMO Act, an entity must have three characteristics to call itself an HMO: 1) an organized system for providing health care or otherwise assuring health care delivery in a geographic area; 2) an agreed upon set of basic and supplemental health maintenance and treatment services; and 3) a voluntarily enrolled group of people.

**Health Plan** A health maintenance organization, preferred provider organization, insured plan, self-funded plan, or other entity that covers health care services.

**Health Professional Shortage Area** An area or group that the U.S. Department of Health and Human Services designates as having an inadequate supply of health care providers. It can be an urban or rural geographical area, a population group for which access barriers can be demonstrated that prevent members from using local providers, or medium- and maximum-security correctional institutions, and public or non-profit private residential facilities.

**Health Status** The level of illness or wellness of a population at a particular time.

**Health Systems** All services, functions and resources in a geographic area whose primary purpose is to affect the state of health of the population.

**Health Plan Employer Data and Information Set** A core set of comparable performance measures of managed care plans on quality, access, patient satisfaction, membership, utilization, finance, and descriptive information on health plan management and activities.

**Hispanic Ethnicity** Refers to people whose origins are from Spain, the Spanish-speaking countries of Central America, South America, and the Caribbean, or persons of Hispanic origin identifying themselves as Spanish, Spanish-American, Hispanic, Hispano, Latino, and so on. In Connecticut, the birth, death, and fetal death certificates have a separate line item for the individual's Hispanic status, to attempt to distinguish Hispanic ethnicity from race. Individuals identifying themselves as "Hispanic" can be of any race.

**Home Health Care** A broad spectrum of services (physical health, psycho-social, and environmental support) provided to persons living at home for the purpose of promoting, maintaining, or restoring health; or minimizing the effects of illness

and disability. Services are delivered by a variety of professional and non-professional personnel, generally through a provider agency which may be voluntary (non-profit) or proprietary (for profit); or through the efforts of an assessment and coordinating program or group.

**Hospice** A multi-disciplinary service program for the dying person and his/her family which provides the supports needed to keep the dying person comfortable and free from pain until the time of death.

**Incidence** The number of new cases of a specific disease occurring during a certain period of time.

**Indemnity Plans** Protection against loss. An indemnity policy pays money to an insured in the event of hospitalization or illness, or a predetermined amount for the medical or surgical procedures incurred.

**Indicator** A measurable factor which reflects or is highly correlated with either a health problem or outcome (e.g., infant mortality or disability days) or particular characteristics of health systems service delivery (e.g., cost per patient day, percent of area residents with a regular control course of care, or time or distance from primary care). A proxy indicator can be used to bring to light social or environmental conditions, values, interests and concerns.

**Individual Practice Association Model HMO** A health care model that contracts with an entity, which in turn contracts with physicians, to provide health care services in return for a negotiated fee. Physicians continue in their existing individual or group practices and are compensated on a per capita, fee schedule, or fee-for-service basis.

**Infant Death** Death occurring to an individual of less than one year (365 days) of age, comprising the sum of *neonatal death* and *postneonatal death*.

**Infant Mortality Rate** The number of deaths reported among infants under one year of age in a calendar year per 1,000 live births reported in the same year and place.

**Inpatient** A person who must stay overnight in a health facility (usually a hospital) for medical treatment.

**Integrated Delivery** The ability to provide comprehensive healthcare services through a coordinated, person-centered continuum designed to improve the health of people in a specified community within economic limits.

**Integrated Delivery System** A group of health care service units that typically includes hospitals, physicians (for example, medical groups and independent practice associations), and other non-hospital providers (for example, ambulatory surgery centers, home health providers, skilled nursing facilities). These units are coordinated in their efforts to service one or more target markets. The integration may take a variety of forms, including joint venture, merger, or contract.

**Integrated Service Networks** Any plan that incorporates a network of providers that can provide the full continuum of necessary medical and social service needs for enrollees, and accepts financial risk for that care.

**Intentional Injury** Injuries and deaths that are self-inflicted or perpetrated by another person. Intentional injuries can be caused by homicide, suicide, assault, domestic violence, and intentional use of firearms.

**Kessner Index (Modified)** The Kessner Index is a composite indicator of the adequacy of prenatal care a mother receives during her pregnancy. Prenatal care is categorized as *adequate*, *intermediate*, or *inadequate* based on three items from the birth certificate: timing of the first prenatal visit; total number of prenatal visits; and length of gestation.

**Licensure** A form of business licensure in which an applicant is granted a license or permit to conduct or engage in the provision of health services within a specific type of institution or setting. Inpatient, outpatient, and non-patient health facilities are licensed by State regulatory agencies with statutory authority to license, certify, inspect, or otherwise approve or disapprove the operation of specific types of health facilities.

**Linkages** A set of relationships between two or more providers for purposes of providing continuous care, avoiding duplication of services, assuring appropriate placement, expanding the range of services available, or assuring the most economical use of available resources.

**Live Birth** The complete expulsion or extraction from the mother of a product of conception, regardless of the duration of pregnancy; after such separation, shows signs of life (e.g., heartbeat, pulsation of the umbilical cord, or movement of voluntary muscles).

**Local Health Department** A governmental public health agency, which is in whole or in part responsible to a sub-state governmental entity or entities (e.g., a city, county, borough, township). A local health department employs one or more full-time professional public health employees (e.g., public health nurse, sanitarian), delivers public health services (e.g., immunization, food inspection), serves a definable geographic area, and has identifiable expenditures and/or budgets in the political subdivision(s) it serves.

**Local Health District** A local governmental entity consisting of two or more towns that is responsible for the public health of its constituent towns.

**Local Public Health Authority** The agency charged with responsibility for meeting the health needs of the community. Usually this is the Board of Health, a city/county/regional authority, and its administrative arm, the local health department.

**Long Term Care** A continuum of broad-ranged maintenance and health services delivered to the chronically ill, disabled, and others. Services may be provided on an inpatient, outpatient, or at-home basis.

**Low Birthweight** A birthweight of less than 2,500 grams (approximately 5 lbs., 8 oz.).

**Managed Care** A system of health care delivery that influences utilization and cost of services and measures performance. The goal is a system that delivers value by giving people access to quality, cost-effective health care.

**Managed Health Care Plan** One or more products which integrate financing and management with the delivery of health care services to an enrolled population; employ or contract with an organized provider network which delivers services and which (as a network or individual provider) either shares financial risk or has some incentive to delivery quality, cost-effective services; and use an information system capable of monitoring and evaluating patterns of covered persons' use of medical services and the cost of those services.

**Management Service Organization** A legal entity that provides practice management, administrative, and support services to individual physicians or group practices. It may be a direct subsidiary of a hospital or may be owned by investors.

**Maternal and Child Care** Services for the prevention, diagnosis, and treatment of diseases and conditions which are specific to mothers and children or for which mothers and children are considered particularly vulnerable populations with special needs.

**Medicaid (Title XIX)** A Federally aided, State-operated and administered program that provides medical benefits for certain indigent or low-income persons in need of health and medical care. The program, authorized by Title XIX of the Social Security Act, is basically for the poor. It does not cover all of the poor, however, but only persons who meet specified eligibility criteria. Subject to broad Federal guidelines, states determine the benefits covered, program eligibility, rates of payment for providers, and methods of administering the program.

**Medicaid HEDIS** A set of health plan performance measures specially targeted to meet the needs of programs that serve Medicaid beneficiaries with particular focus on women and children.

**Medicaid Waivers** A waiver of current federal Medicaid law obtained from the HCFA that exempts states from a number of federal Medicaid statutes and regulations that would otherwise hinder their efforts to create Medicaid managed care programs. The two most common types of waivers obtained for this purpose are:

**1115 waiver** 1115 waivers allow states to use federal funds in ways that are not otherwise permitted under federal law to implement and test innovations in their Medicaid programs. These programs, often known as demonstrations, usually include the creation of capitated managed care programs that alter eligibility requirements and benefit packages.

**1915(b) waiver** 1915 (b) waivers exempt states from the freedom-of-choice requirements that allow Medicaid beneficiaries the same liberty to select among providers as the privately insured. By waiving this requirement, states are able to mandate the enrollment of certain Medicaid recipients into a managed care program. They also allow states to waive requirements of uniform statewide operation (statewide effectiveness) and identical benefits for different types of beneficiaries (comparability).

**Medically Indigent** Individuals with little or no health insurance and who are without sufficient resources to pay for essential health care.

**Medically Underserved Area** An urban or rural geographic area designated by the federal Department of Health, Education and Welfare as having a shortage of personal health services, or a population group designated by the Secretary as having a shortage of such services.

**Medicare** A federally funded nationwide hospital and medical-care insurance program for the elderly (over age 64) and some people with disabilities.

**Medigap** Private insurance policies that supplement Medicare coverage.

**Mental Health** The capacity of an individual to form harmonious relations with his/her social and physical environment, and to achieve a balanced satisfaction of his/her own drives.

**Morbidity** The extent of illness, injury, or disability in a defined population, expressed in general or specific rates of incidence or prevalence. Sometimes used to refer to any episode of disease.

**Mortality Rate** The mortality rate (death rate) expresses the number of deaths in a unit of population within a prescribed time and may be expressed as crude death rates (e.g., total deaths in relation to total population during a year) or as rates

specified for disease and, sometimes, for age, sex, or other attributes (e.g., number of deaths from cancer in white males in relation to the white male population during a year).

**National Health Care** A system of health insurance administered by the government that insures all citizens. The government serves as the single insurer (single-payer) and sets all fees for hospitals, physicians, and other health providers.

**Neonatal Death** Death occurring to an infant less than 28 days of age.

**Network** A defined group of providers, typically linked through contractual arrangements, which provide either specific benefits or a full range of acute and long term care services.

**Network Model HMO** An HMO type that contracts with more than one physician group, and may contract with single- and multi-specialty groups. The physician works out of his/her own office. The physician may share in utilization savings, but does not necessarily provide care exclusively for HMO members.

**Non-Community Water System** A public water system which serves at least twenty-five (non-residents) persons at least sixty days out of the year and is not a community or a seasonal water system.

**Non-Transient Non-Community Water System** A public water system that is not a community system and that regularly serves at least twenty-five of the same persons over six months per year.

**Nursing Homes** A wide range of licensed health facilities, other than hospitals, that provide various levels of maintenance and personal or nursing care to people who are unable to care for themselves and who may have health problems which range from minimal to very serious. The term includes free-standing institutions, or identifiable components of other health facilities that provide nursing care and related services, personal care, and residential care.

**Organized Delivery Systems** Networks of providers and payers that provide care and compete with other systems for enrollees in regions. Systems include hospitals, primary care physicians, specialty care physicians, and other providers and sites that offer a full range or preventive and treatment services. Also refers to accountable health plans, coordinated care networks, community care networks, integrated health systems, and integrated service networks.

**Outpatient** A patient who receives ambulatory care at a hospital or other facility without being admitted to the facility. Usually, it does not mean people receiving services from a physician's office or other program that does not provide inpatient care.

**Physician-Hospital Organization** A legal entity formed and owned by one or more hospitals and physician groups in order to obtain payer contracts and to further mutual interests. Physicians maintain ownership of their practices while agreeing to accept managed care patients under the terms of the agreement. The PHO serves as a negotiating, contracting and marketing unit. (See integrated delivery system).

**Point-of-Service Plan** A health plan allowing the covered person to choose to receive a service from a participating or non-participating provider, with different benefit levels associated with the use of participating providers. Point-of-service can be provided in several ways: 1) an HMO may allow members to obtain limited services from non-participating providers; 2) an HMO may provide non-participating benefits through a supplemental major medical policy; 3) a PPO may be used to provide both participating and non-participating levels of coverage and access; or 4) various combinations of the above may be used.

**Policy Development** The process of selecting the most appropriate response to public health threats and trends.

**Population Based Services** Preventive interventions and personal health services, developed and available for the entire population rather than for individuals in a one-on-one situation. Disease prevention, health promotion, and statewide outreach are major components. Common among these services are immunization campaigns, injury prevention, lead poisoning prevention and screening programs, outreach and public education, newborn metabolic screening, and counseling for a family who infant has died from Sudden Infant Death Syndrome.

**Postneonatal Death** Death occurring to an infant aged 28 days to 364 days.

**Preferred Provider Organization** A program in which contracts are established with providers of medical care. Providers under such contracts are referred to as preferred providers. Usually, the benefit contract provides significantly better benefits (fewer co-payments) for services received from preferred providers, thus encouraging covered persons to use these providers. Covered persons are generally allowed benefits for non-participating providers' services, usually on an indemnity basis with significant co-payments. A PPO arrangement can be insured or self-funded. Providers may be, but are not necessarily, paid on a discounted fee-for-service basis.

**Premature** A live birth or fetal death that occurs before the completion of the 37th week of gestation.

**Prenatal** Existing or taking place prior to birth.

**Prepayment** Usually refers to any payment to a provider for anticipated services (such as an expectant mother paying in advance for maternity care). Sometimes prepayment is distinguished from insurance as referring to payment to organizations which, unlike an insurance company, take responsibility for arranging for and providing needed services as well as paying for them (such as health maintenance organizations, prepaid group practices, and medical foundations).

**Prevalence** The number of cases of a disease, infected persons, or persons with some other attribute present during a particular interval of time. Prevalence is often expressed as a rate.

**Preventive Care** Comprehensive care emphasizing patients' behaviors that encourage health promotion and disease prevention, early detection, and early treatment of conditions, generally including routine physical examinations, immunization, and well-person care.

**Preventive Health Services** Refers to the extensive array of procedures and services provided to the individual by medical providers and other practitioners which are designed to prevent disease or arrest its development. Services such as immunization, screening tests, chemoprophylaxis and contraception are included.

**Primary Care** Basic or general health care focused on the point at which a patient ideally first seeks assistance from the medical care system. Primary care is considered comprehensive when the primary provider enters into a sustained partnership with the patient to take responsibility for the overall coordination for the care of the patient's health problems; biological, behavioral, or social. Physicians have traditionally provided the care, but, increasingly, it is provided by other personnel such as nurse practitioners or physician assistants.

**Primary Care Case Management** A Medicaid managed care arrangement in which the State Medicaid agency contracts directly with primary care providers to act as "gatekeeper," approving and monitoring all covered services for the patient. For this case management service, the primary care providers are paid a per patient per month case management fee (usually between three and five dollars). In addition, the providers are reimbursed by the state on a fee-for-service basis for all services provided.

**Primary Care Physicians** Internists or general/family practitioners who treat a variety of medical problems across all patient age groups and who frequently serve as the patient's first point of contact with the healthcare system. In some cases, obstetricians, gynecologists, and pediatricians are considered primary care physicians.

**Provider Sponsored Organization** Within the Medicare program, HCFA allows hospitals and doctors to group together to form this entity for the Medicare program. Similar to HMOs except the entity is run by medical providers.

**Public Health** One of the efforts organized by society to protect, promote, and restore the people's health. The combination of sciences, skills, and beliefs directed to the maintenance and improvement of the health of all the people through collective or social actions. A social institution, a discipline, and a practice with the goal to reduce the amount of disease, premature death, and disease-produced discomfort and disability in the population.

**Quality of Care** A measure of the degree to which delivered health care services meet established professional standards and judgments of value by the consumer. Quality may also be seen as the degree to which actions taken or not taken maximize the probability of beneficial health outcomes and minimize risk and other untoward outcome, given the existing state of medical science and art. Quality is frequently described as having three dimensions: quality of input resources, (certification, and/or training of providers); quality of the process of services delivery (the use of appropriate procedures for a given condition), and quality of outcome of service use (actual improvement in condition or reduction of harmful effects).

**Race** A population of individuals who identify themselves from a common history, nationality, or geographical place. When responses in the "race" line item on vital records are associated with the definition of Hispanic origin, they are re-coded to "white race," as described in the National Center for Health Statistics instruction manuals for coding vital records. Individuals identifying themselves as either "white," "black," or "other" race can be of any ethnic group.

**Rehabilitation** The combined and coordinated use of medical, social, educational, and vocational measures used for training or re-training individuals disabled by disease or injury to the highest possible level of functional ability.

**Residence** The usual place of abode of the person to whom the vital event occurred. For births and fetal deaths, residence is defined as the mother's usual place of residence.

**Risk Sharing** The distribution of financial risk among parties furnishing a service. For example, if a hospital and a group of physicians from a corporation provide health care at a fixed price, a risk-sharing arrangement would entail both the hospital and the physician group being held liable if expenses exceed revenues.

**Surveillance** The systematic collection, analysis, interpretation, and dissemination of health data to assist in the planning, implementation, and evaluation of public health interventions and programs.

**Technology** Mechanical devices, pharmaceuticals, and techniques used in medical and surgical diagnostic and therapeutic procedures. These devices and techniques are often related to innovations in treatment methods and advances in patient care.

**Teenage Mother** A woman under 20 years of age on the date of delivery.

**Third-Party Payer** Any organization, public or private, that pays or insures health or medical expenses on behalf of beneficiaries or recipients. An individual pays a premium for such coverage in all private and in some public programs; the payer organization then pays bills on the individual's behalf. Such payments are called third-party payments and are distinguished by the separation among the individual receiving the service (the first party), the individual or institution providing it (the second party), and the organization paying for it (the third party).

**Transient Non-Community Water System** A non-community water system that does not meet the definition of a non-transient non-community water system.

**Trimester of pregnancy** One-third of the total gestation period of a full-term pregnancy, or 13 weeks per trimester. The "third trimester" classification comprises pregnancies of 27 or more weeks gestation. The weekly count begins on the first day of last menstrual period.

**Underinsured** People with public or private insurance policies that do not cover all necessary medical services, resulting in out-of-pocket expenses.

**Underlying Cause of Death** The disease or injury that initiated the sequence of events leading directly to death, or the circumstances of the accident or violence that produced the fatal injury.

**Uninsured** People who lack public or private health insurance.

**Unintentional Injury** Injuries and deaths that are considered accidental. Unintentional injuries can be a result of residential fires, falls, motor-vehicle-related, and drownings.

**Universal Access/Coverage** The provision of a standard minimum level of healthcare benefits to all individuals residing in an area (may be a region, state, or the U.S. as a whole).

**Utilization** Patterns or rates of use of a single service or type of service, (e.g., hospital care, physician visits, prescription drugs). Use is also expressed in rates per unit of population at risk for a given period.

**Utilization Review** A cost-control mechanism used by some insurers and employers that evaluate health care on the basis of appropriateness, necessity, and quality.

**Very Low Birthweight** A birthweight of less than 1,500 grams (approximately 3 lbs., 5 oz.).

**Years of Potential Life Lost** A measure of the relative impact of various diseases and lethal forces on society. It highlights the loss to society as a result of youthful or early deaths. The figure for potential years of life lost due to a particular cause is the sum, over all persons dying from that cause, of the years that these persons would have lived had they experienced normal life expectation.

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- Waiver Application Development Council discussions, July 30, 1997.

## APPENDIX P

### MAPS

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- 1 Connecticut's Towns and Uniform Service Regions, 1997
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- 3-1 Connecticut Population Distribution - 1990 Census
- 3-2 1995 Population Age 65+
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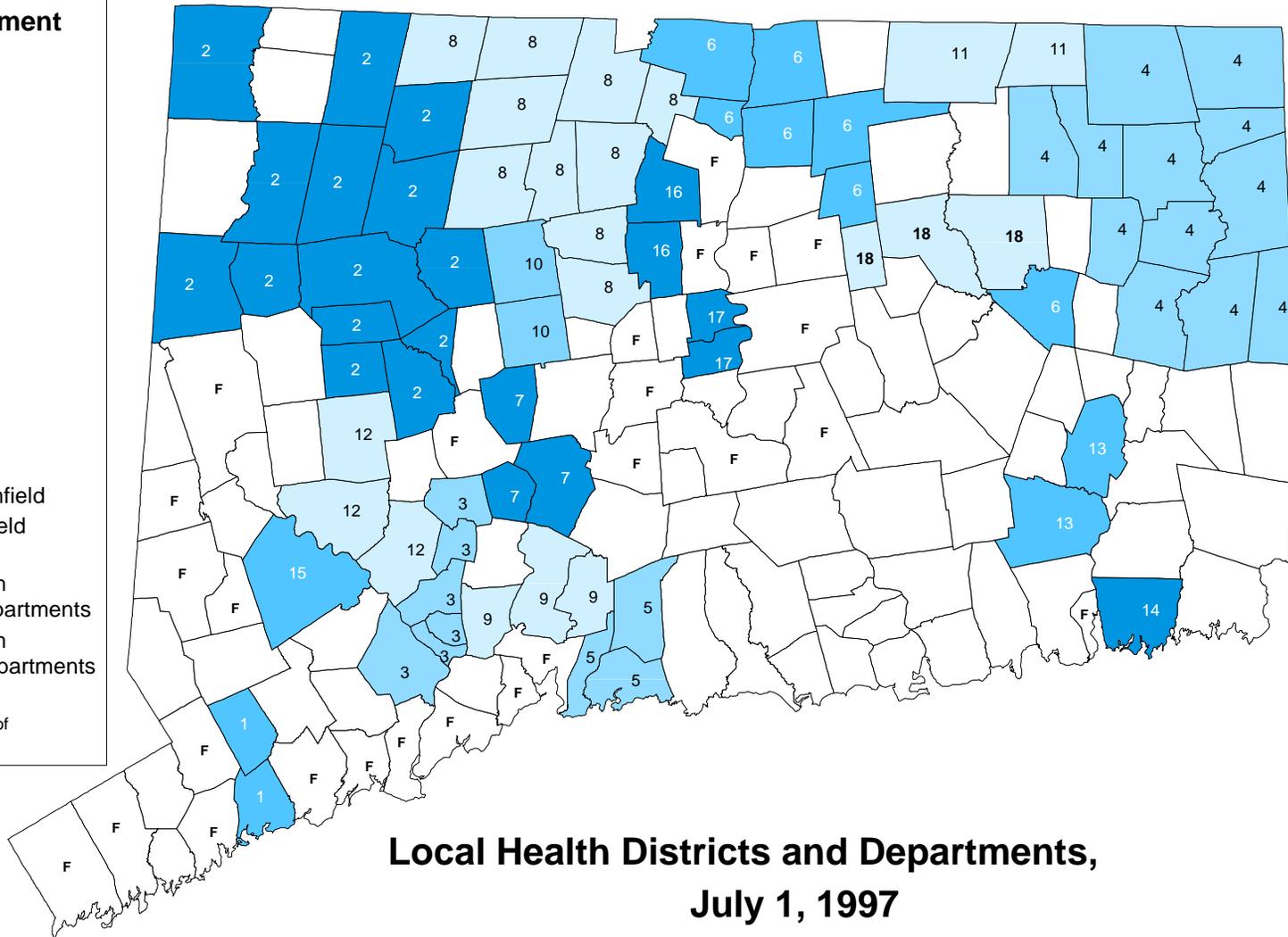


Map 1-1

**District\* or Department**

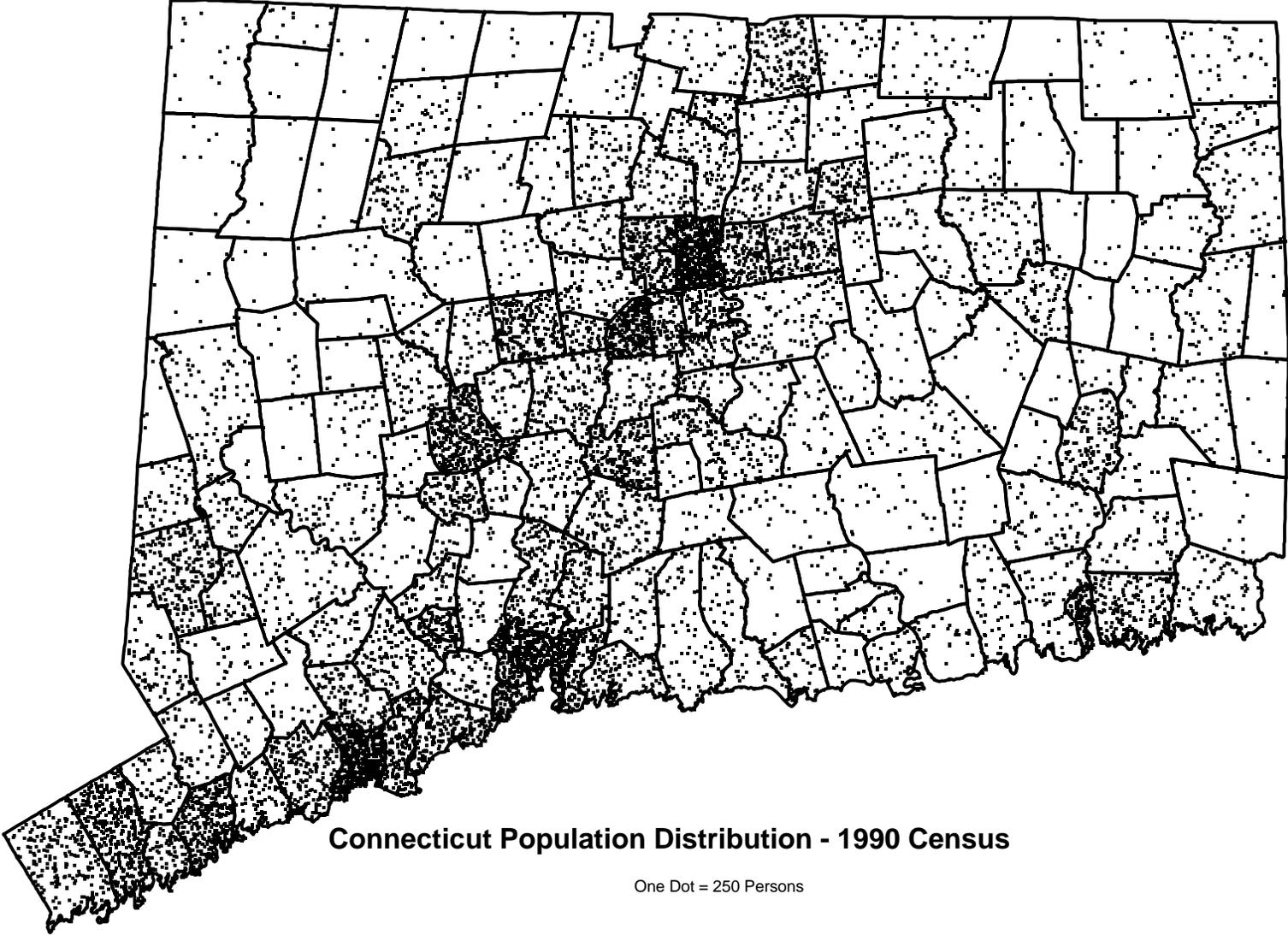
- 1 Weston-Westport
- 2 Torrington Area
- 3 Naugatuck Valley
- 4 Northeast
- 5 East Shore
- 6 North Central
- 7 Chesprocott
- 8 Farmington Valley
- 9 Quinnipiack Valley
- 10 Bristol-Burlington
- 11 Stafford
- 12 Pomperaug
- 13 Uncas Regional
- 14 Ledge Light
- 15 Newtown
- 16 West Hartford-Bloomfield
- 17 Rocky Hill-Wethersfield
- 18 Eastern Highlands
- F Individual Towns with Full-time Health Departments
- Individual Towns with Part-time Health Departments

\* Numbers are assigned in order of date of formation of health district



**Local Health Districts and Departments,  
July 1, 1997**

Map 3-1

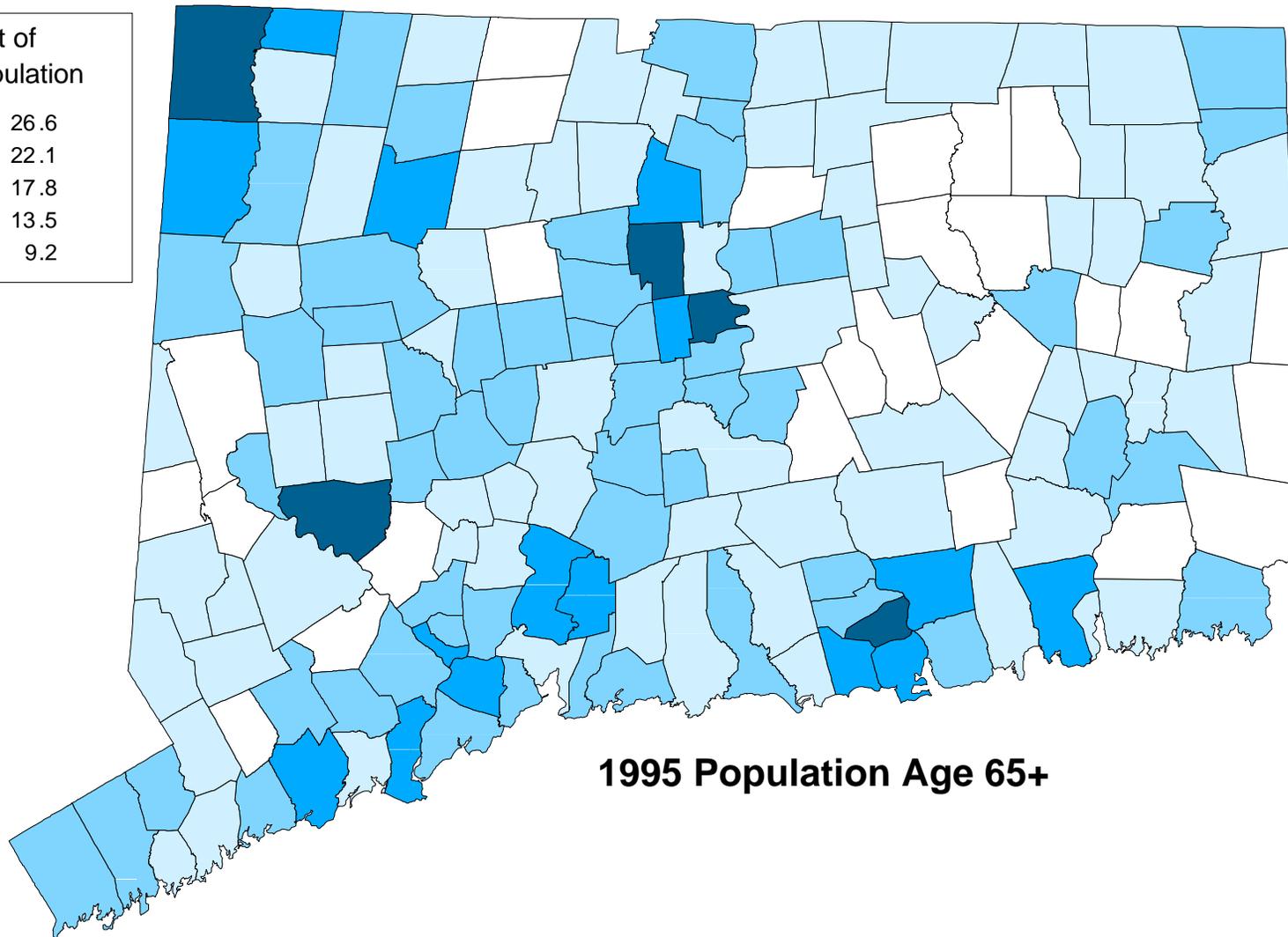
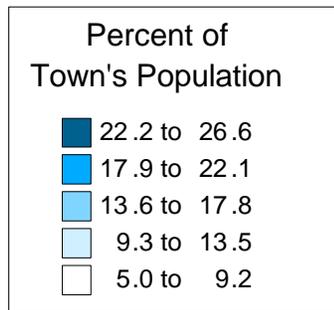


**Connecticut Population Distribution - 1990 Census**

One Dot = 250 Persons

Note: Dots are randomly distributed within or at a town boundary.  
Source: U.S. Census Bureau, 1990

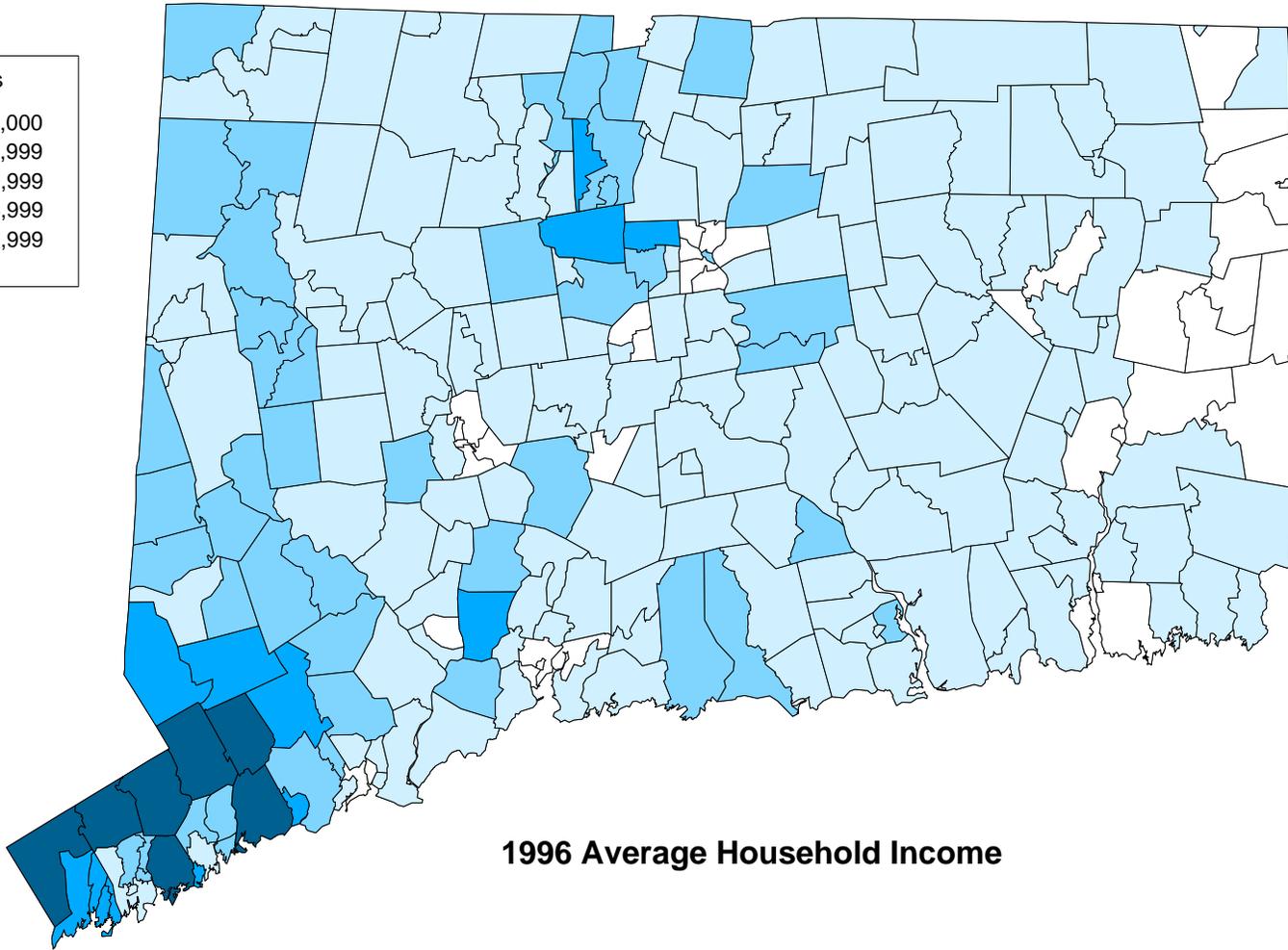
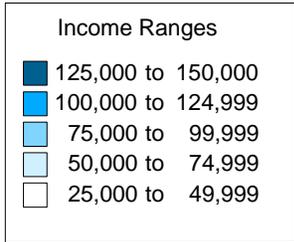
Map 3-2



### 1995 Population Age 65+

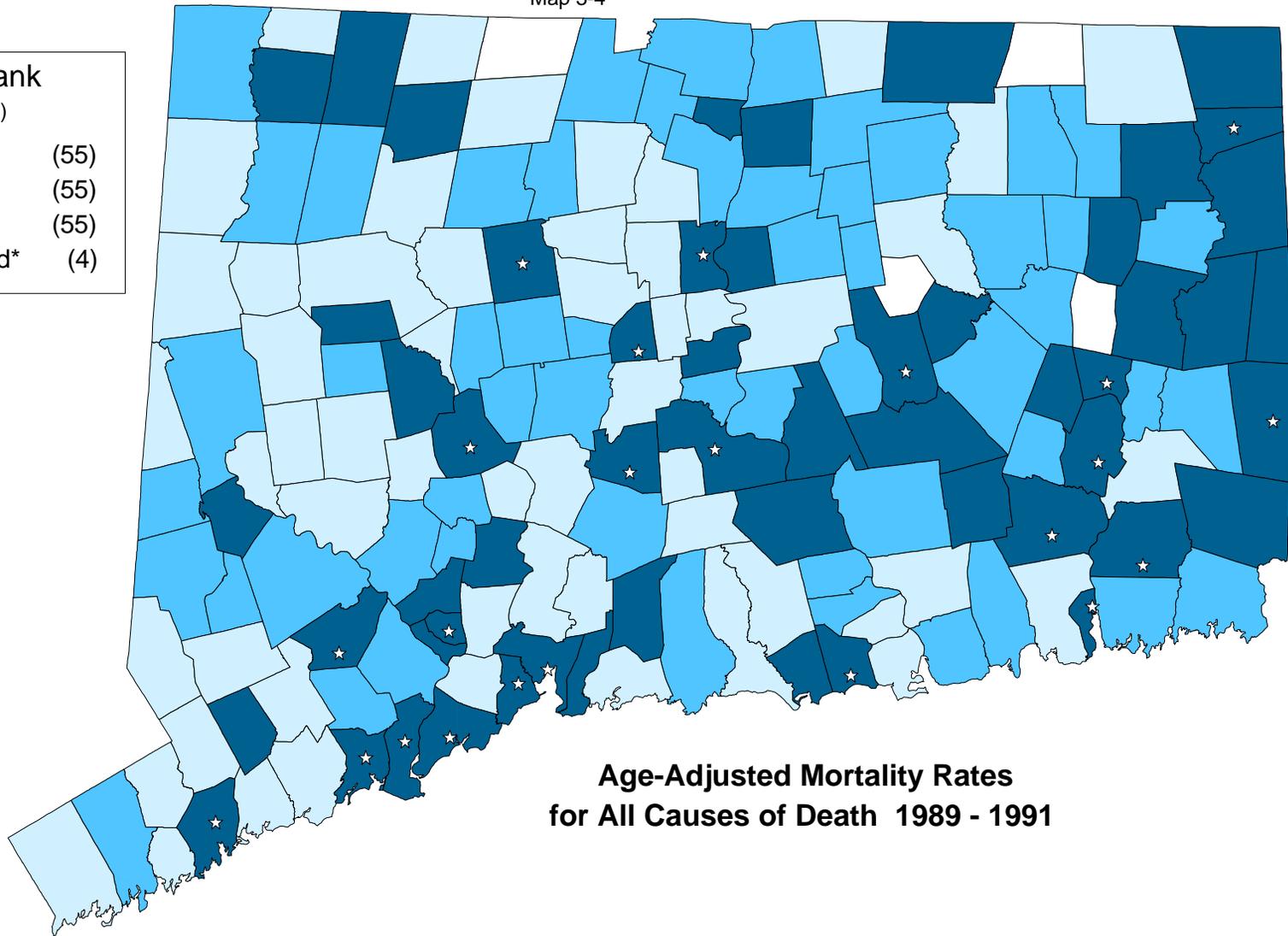
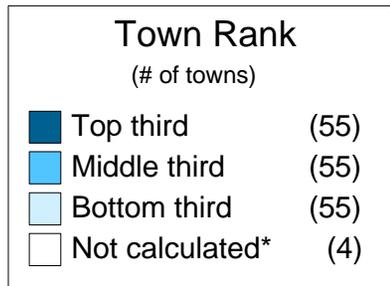
Note: Population represents data interpolated to 4/95  
Source: OPM Population Projections, 9/95

Map 3-3



Source: Equifax National Decision Systems - WEFA Group, 1996 Update  
Connecticut Zipcodes

Map 3-4



### Age-Adjusted Mortality Rates for All Causes of Death 1989 - 1991

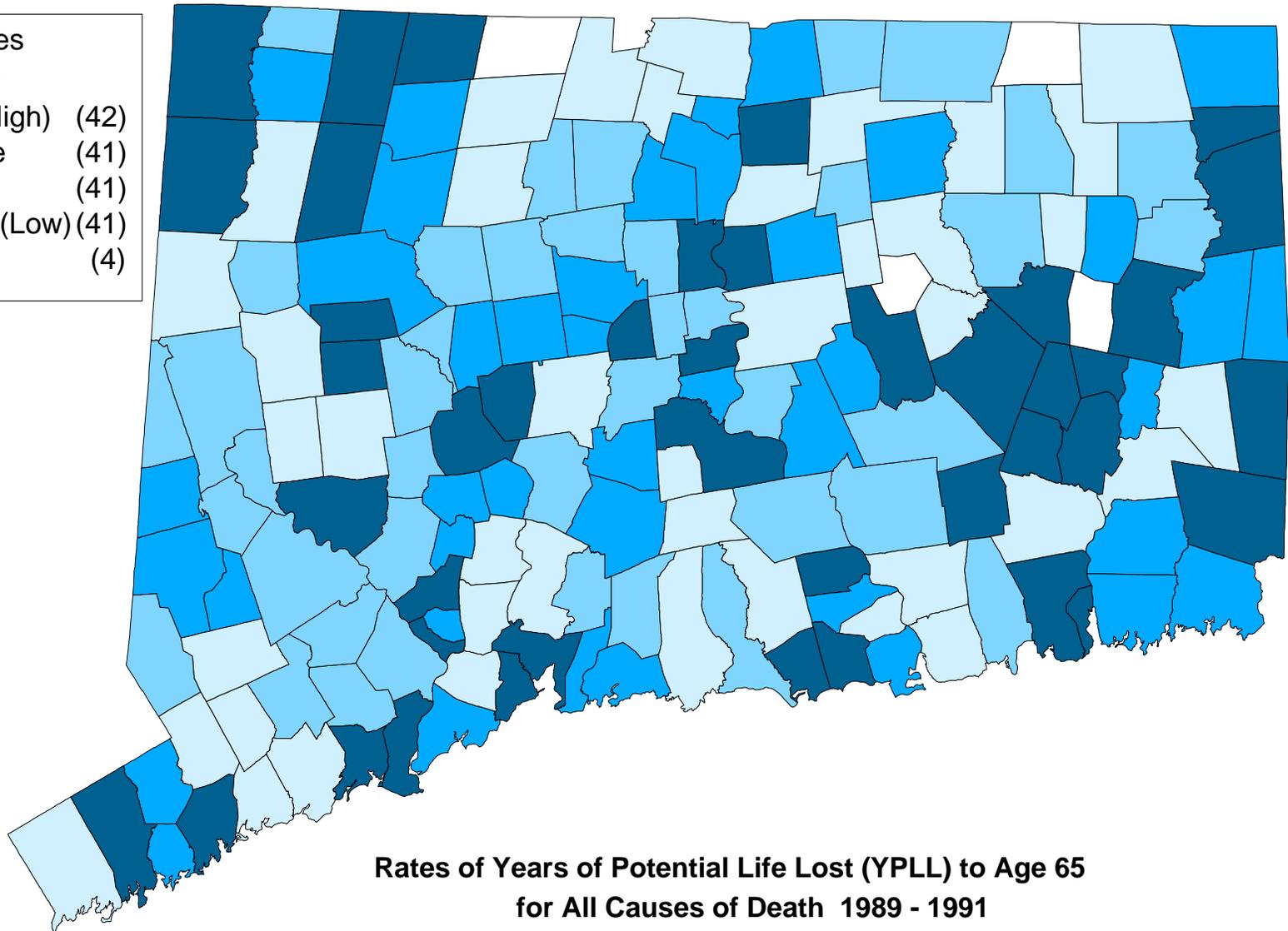
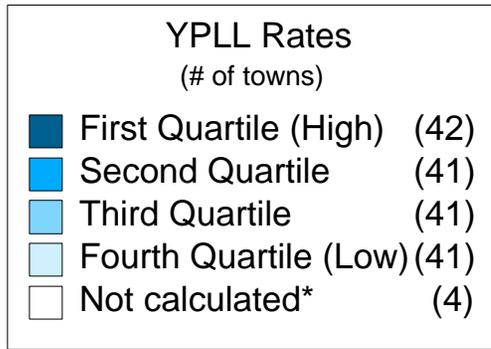
☆ The town age-adjusted mortality rate is significantly higher than the state rate of 631.1 ( $p < 0.05$ ), using the 1970 Standard Million Reference Population.

\* Rates are not calculated for less than 25 events.

Note: Rates are expressed as deaths per 100,000, adjusted to the U.S. 1970 Standard Million Population.

Source: DPH, OPPE, 1998

Map 3-5



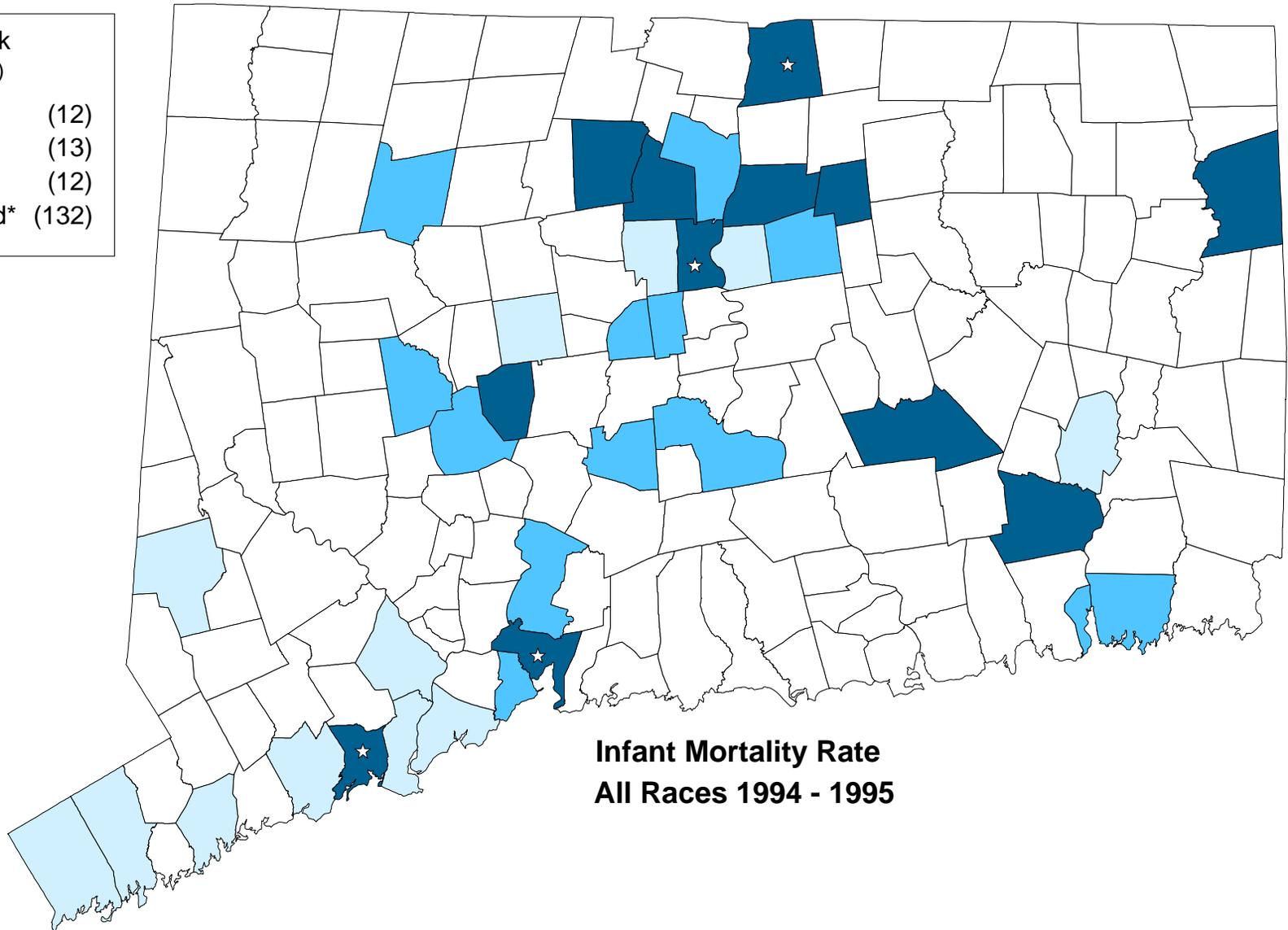
\* Rates are not calculated for less than 20 events.

Note: Rates are expressed as deaths per 100,000, adjusted to the U.S. 1970 Standard Million Population.

Source: DPH, OPPE, 1997

Map 3-6

Town Rank (# of towns)	
Top third	(12)
Middle third	(13)
Bottom third	(12)
Not calculated*	(132)

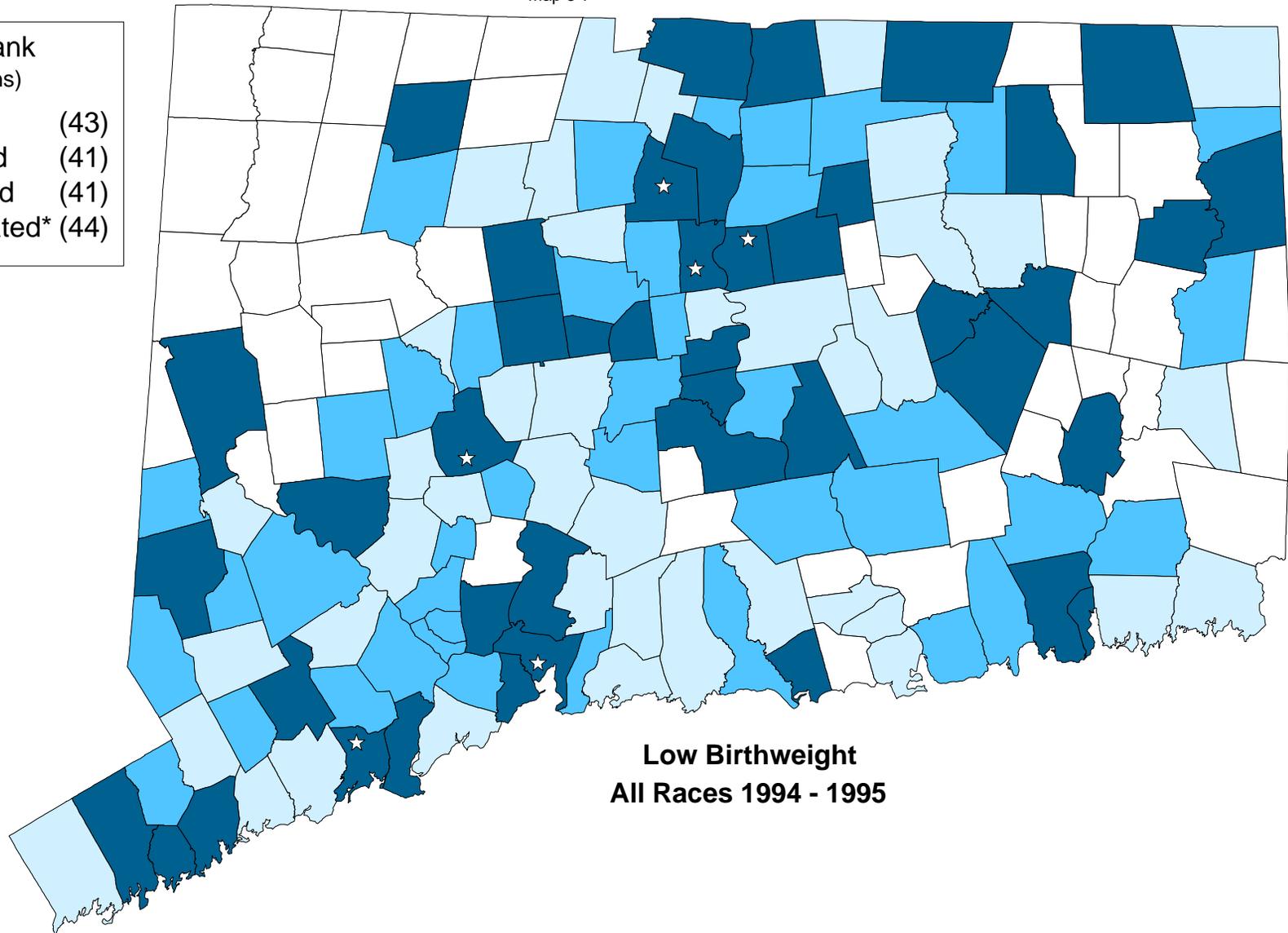
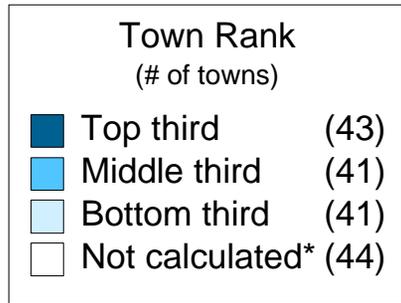


☆ The town infant mortality rate is significantly higher than state rate of 7.6/1,000 births ( $p < 0.0125$ ).

\* Rates are not calculated for less than 5 events.

Source: DPH, OPPE, 1997

Map 3-7

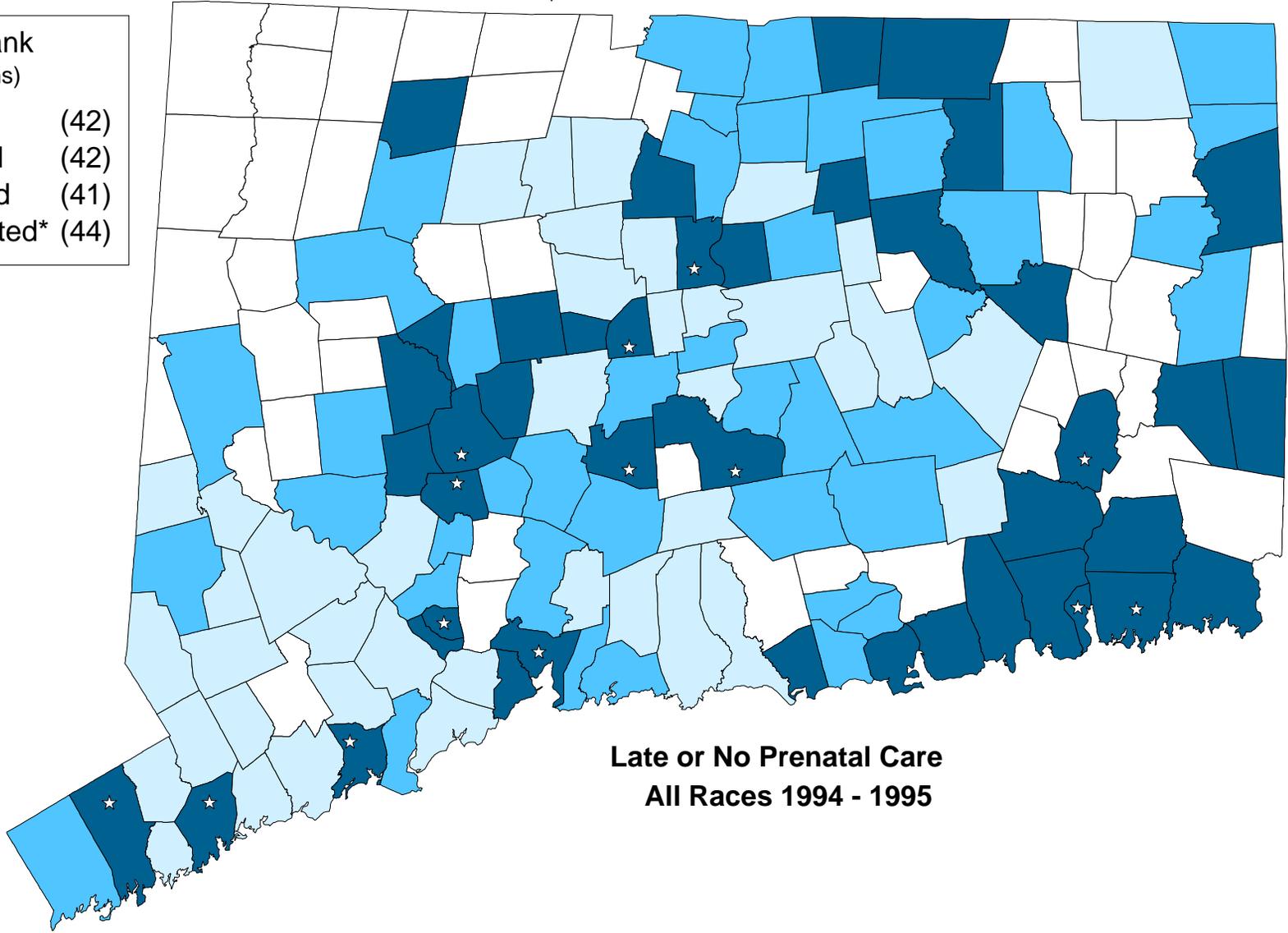


**Low Birthweight  
All Races 1994 - 1995**

☆ The town low birthweight percentage is significantly higher than the state percentage of 7.0 ( $p < 0.01$ ).  
\* Percentages are not calculated when the number of events is less than 5.  
Source: DPH, OPPE, 1997

Map 3-8

Town Rank	
(# of towns)	
Top third	(42)
Middle third	(42)
Bottom third	(41)
Not calculated*	(44)

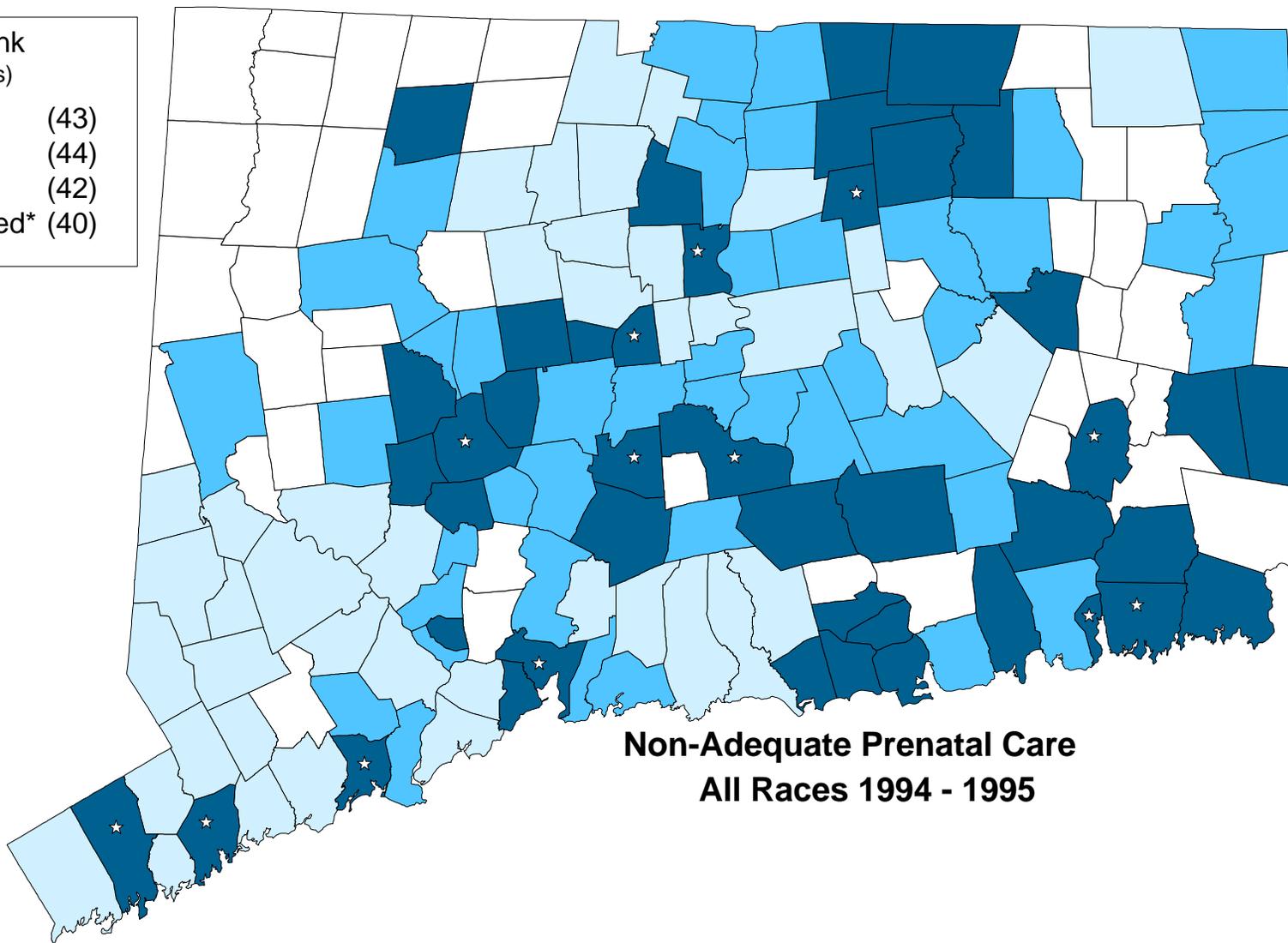
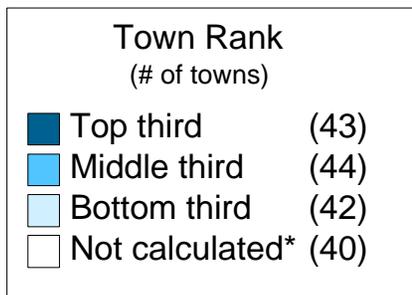


**Late or No Prenatal Care  
All Races 1994 - 1995**

☆ The town late or no prenatal care percentage is significantly higher than the state percentage of 11.9 (p<0.01).

\* Percentages are not calculated when the number of events is less than 5.

Source: DPH, OPPE, 1997



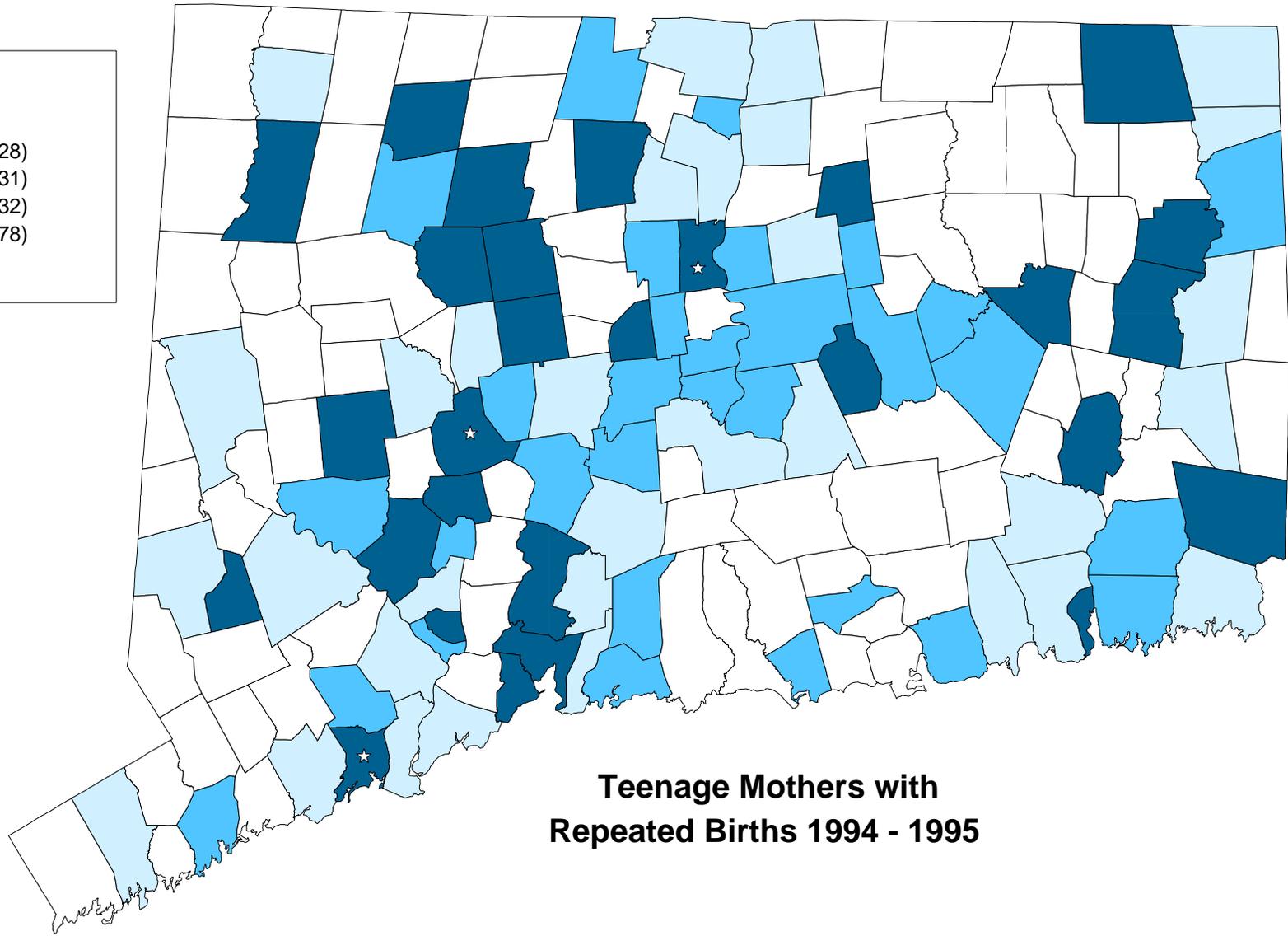
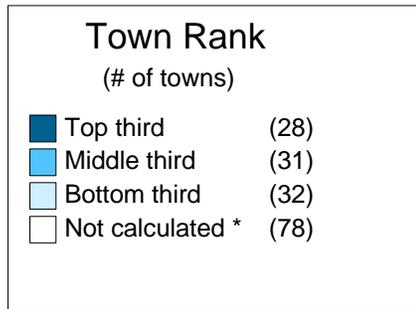
### Non-Adequate Prenatal Care All Races 1994 - 1995

☆ The town non-adequate prenatal care percentage is significantly higher than the state percentage of 16.1 ( $p < 0.01$ ).

\* Percentages are not calculated when the number of events is less than 5.

Source: DPH, OPPE, 1997

Map 3-10



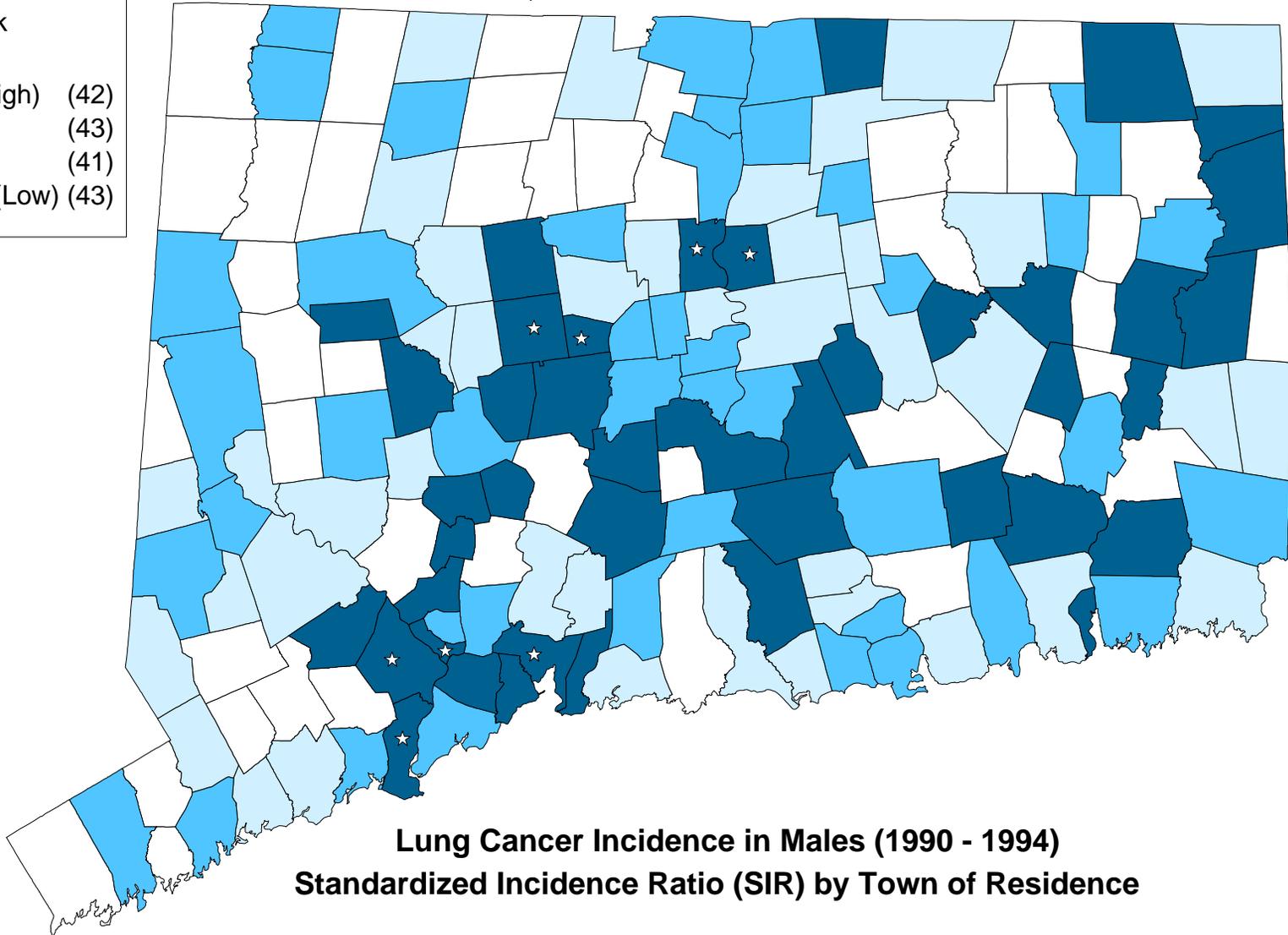
**Teenage Mothers with Repeated Births 1994 - 1995**

☆ The town percentage of teenage mothers with repeated births is significantly higher than the state percentage of 20.8 ( $p < 0.01$ ).

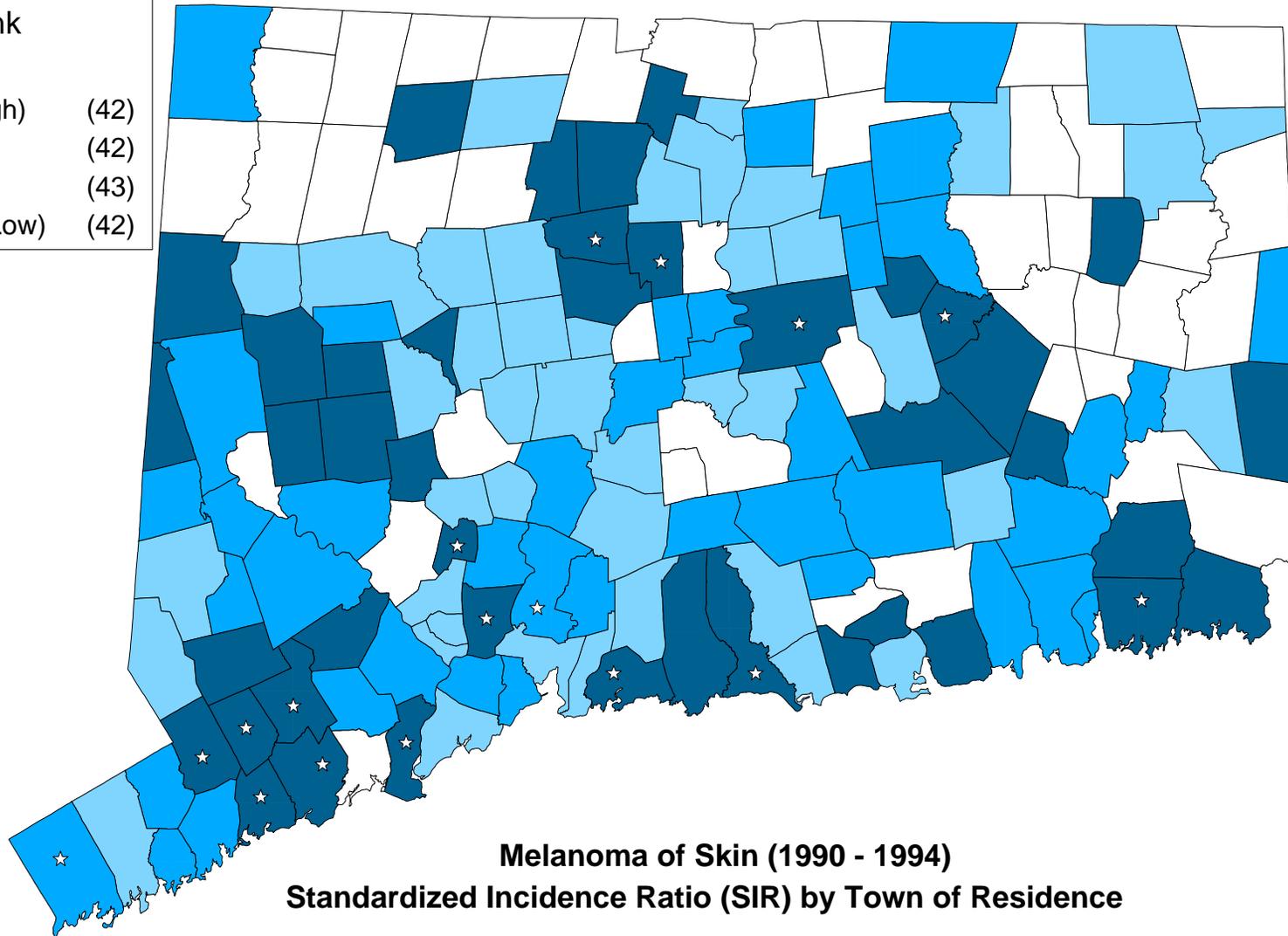
\* Percentages are not calculated when the number of events is less than 5.

Source: DPH, OPPE, 1997

Map 3-11

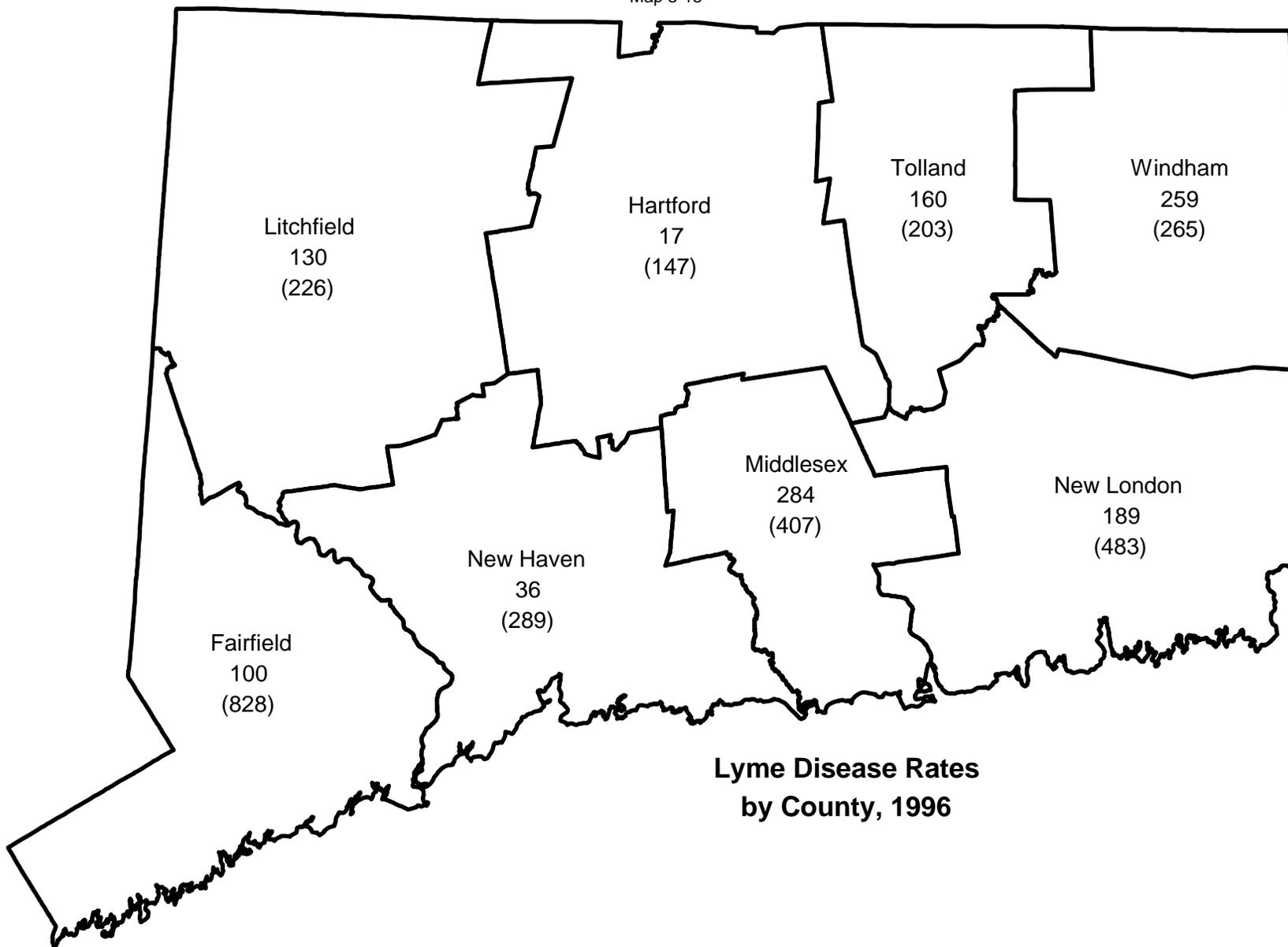


☆ Significantly elevated ( $p < 0.05$ ) SIR based on statewide rates  
Source: DPH, OPPE, Tumor Registry, 1997



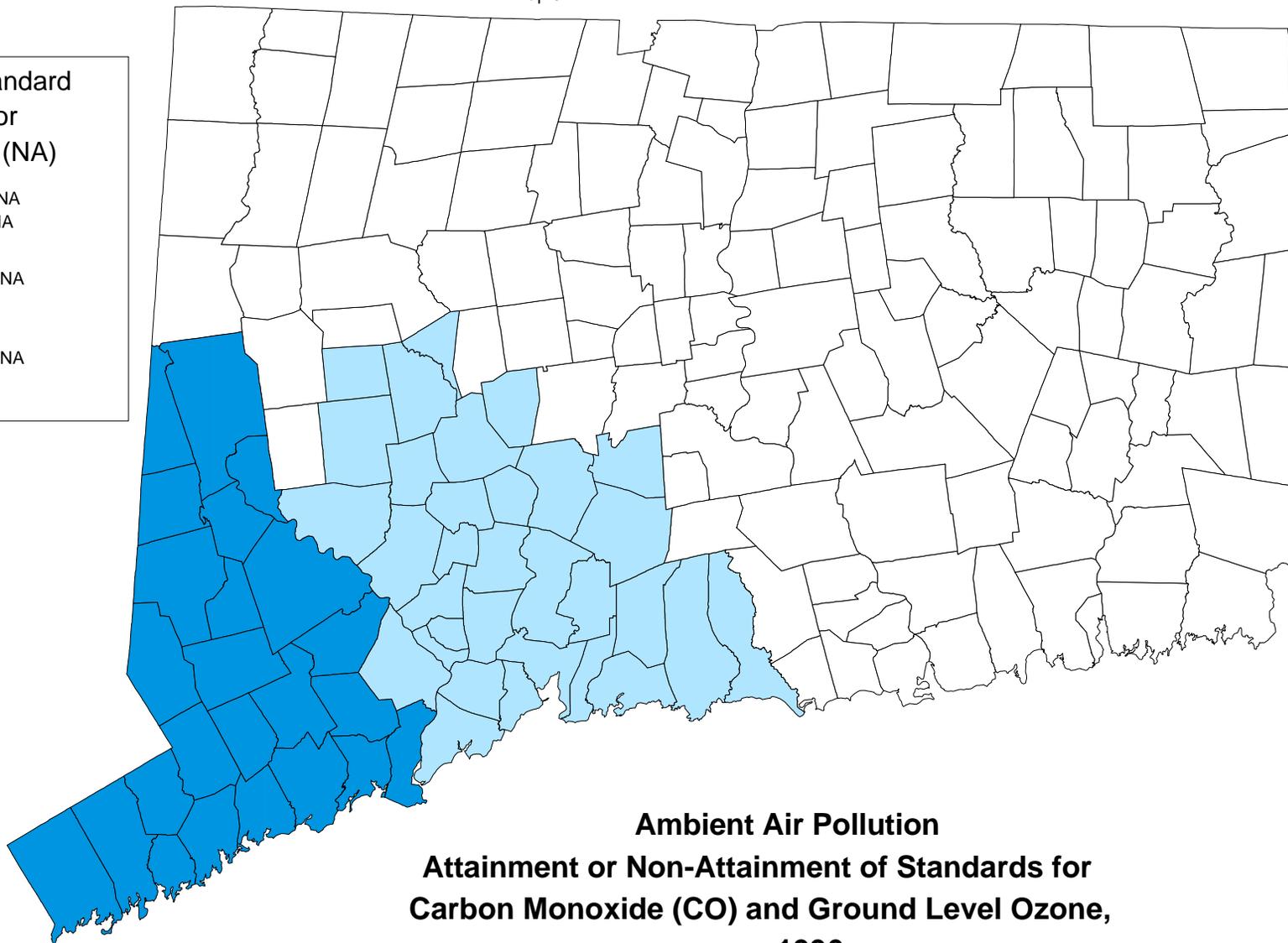
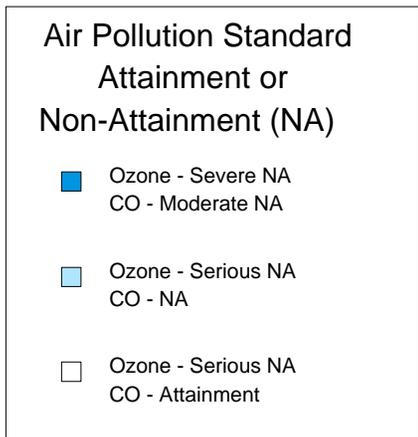
☆ Significantly elevated ( $p < 0.05$ ) SIR based on statewide rates  
Source: DPH, OPPE, Tumor Registry, 1997

Map 3-13

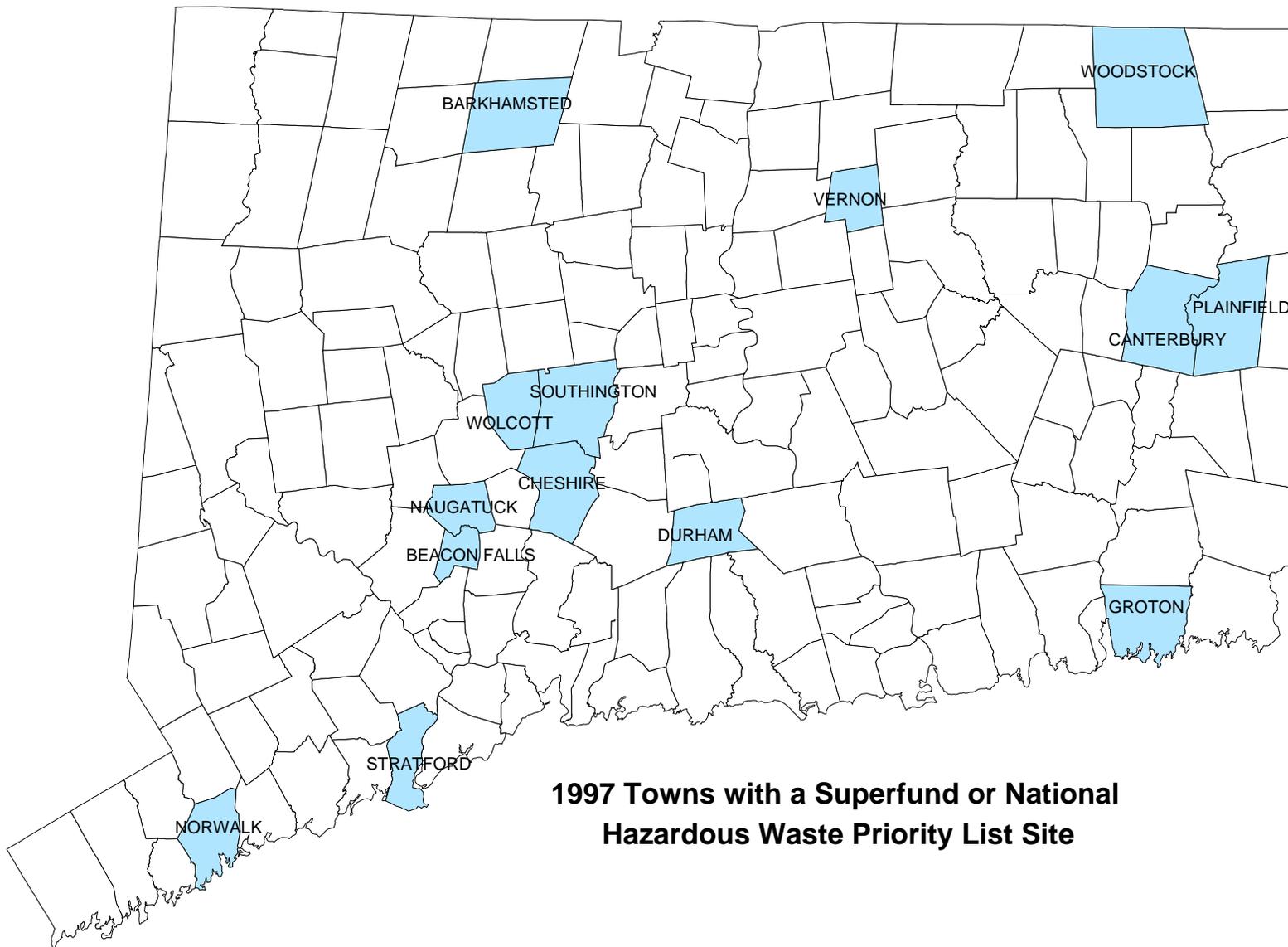


**Lyme Disease Rates  
by County, 1996**

Note: The number of cases in each county is listed in the parenthesis.  
Source: DPH, BCH, Epidemiology Division, 1997



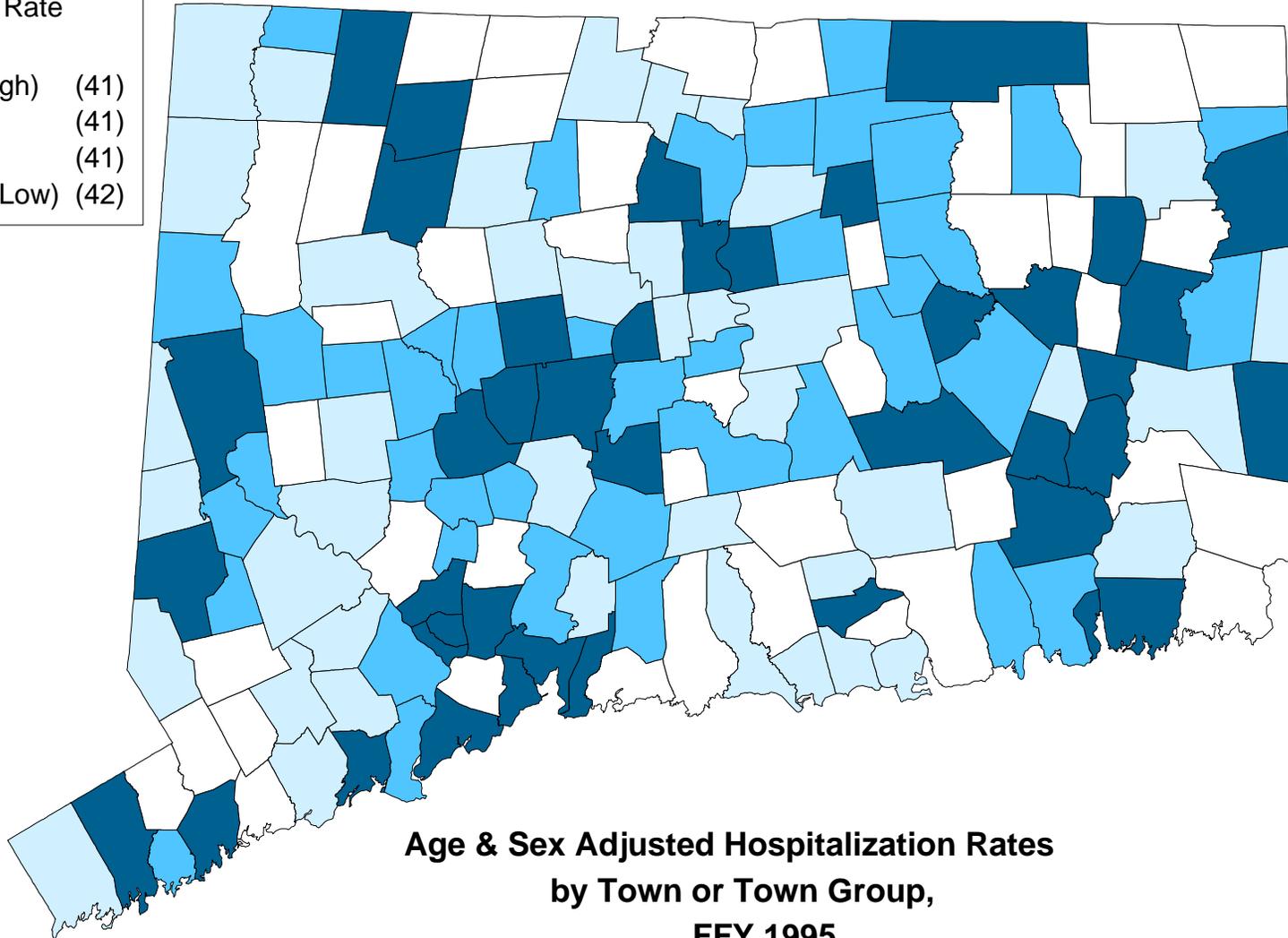
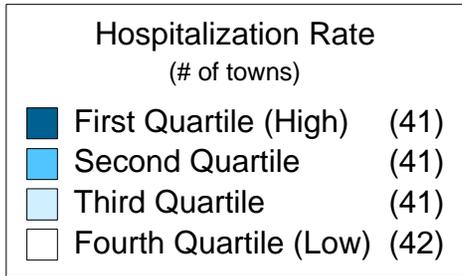
Map 3-15



**1997 Towns with a Superfund or National  
Hazardous Waste Priority List Site**

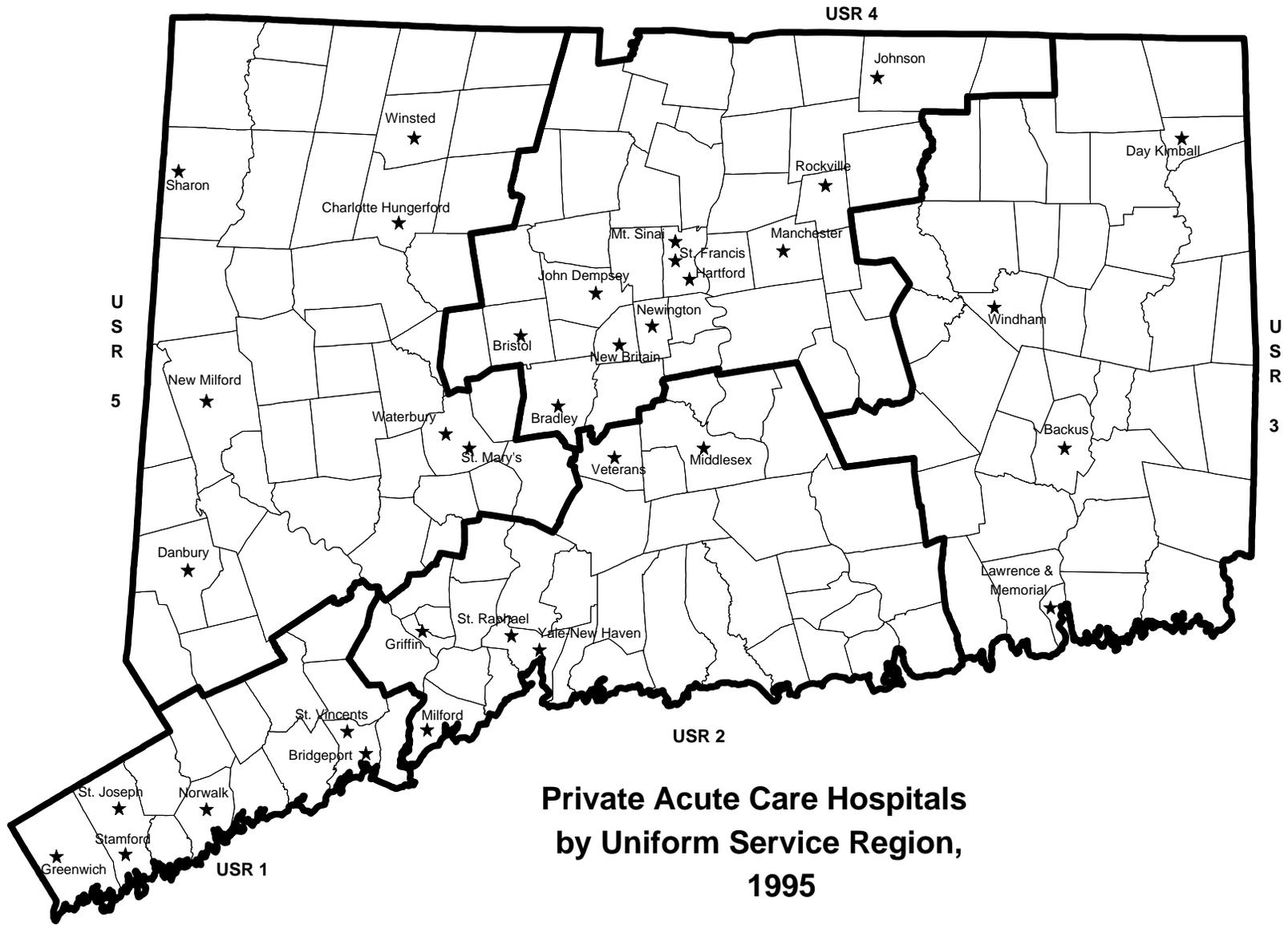
Source: U.S. Public Health Service, Agency for Toxic Substance & Disease Registry,  
Division of Environmental Epidemiology & Occupational Health

Map 4-1



**Age & Sex Adjusted Hospitalization Rates  
by Town or Town Group,  
FFY 1995**

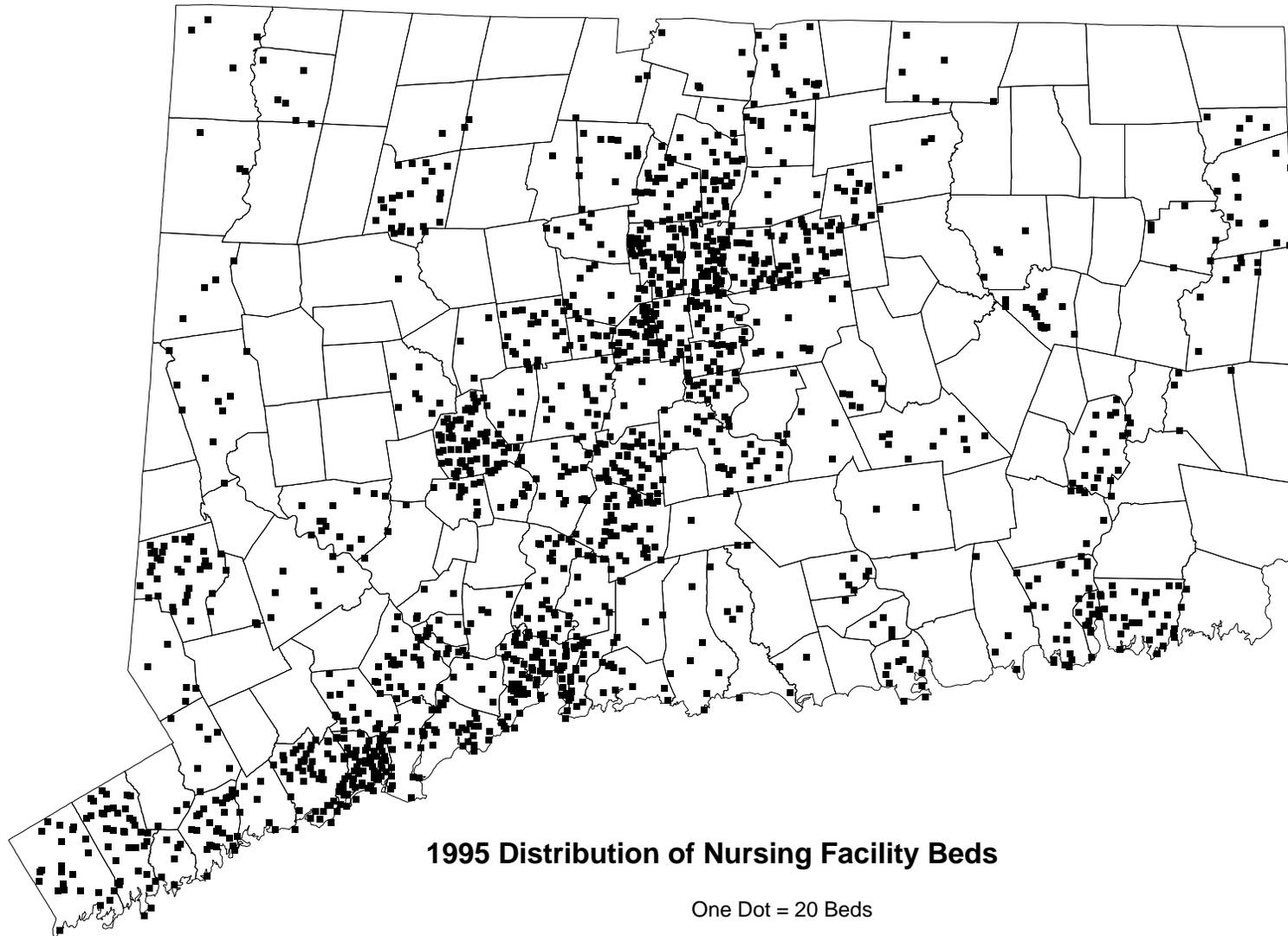
Note: The hospitalization rate is calculated per 1,000 population.  
Source: OHCA, FFY 1995 Connecticut Acute Care Hospital Discharge Data.



**Private Acute Care Hospitals  
by Uniform Service Region,  
1995**

Source: DPH, OPPE, 1997

Map 4-3



Note: The dots are randomly distributed within or at the town boundary and do not represent a long term care facility.

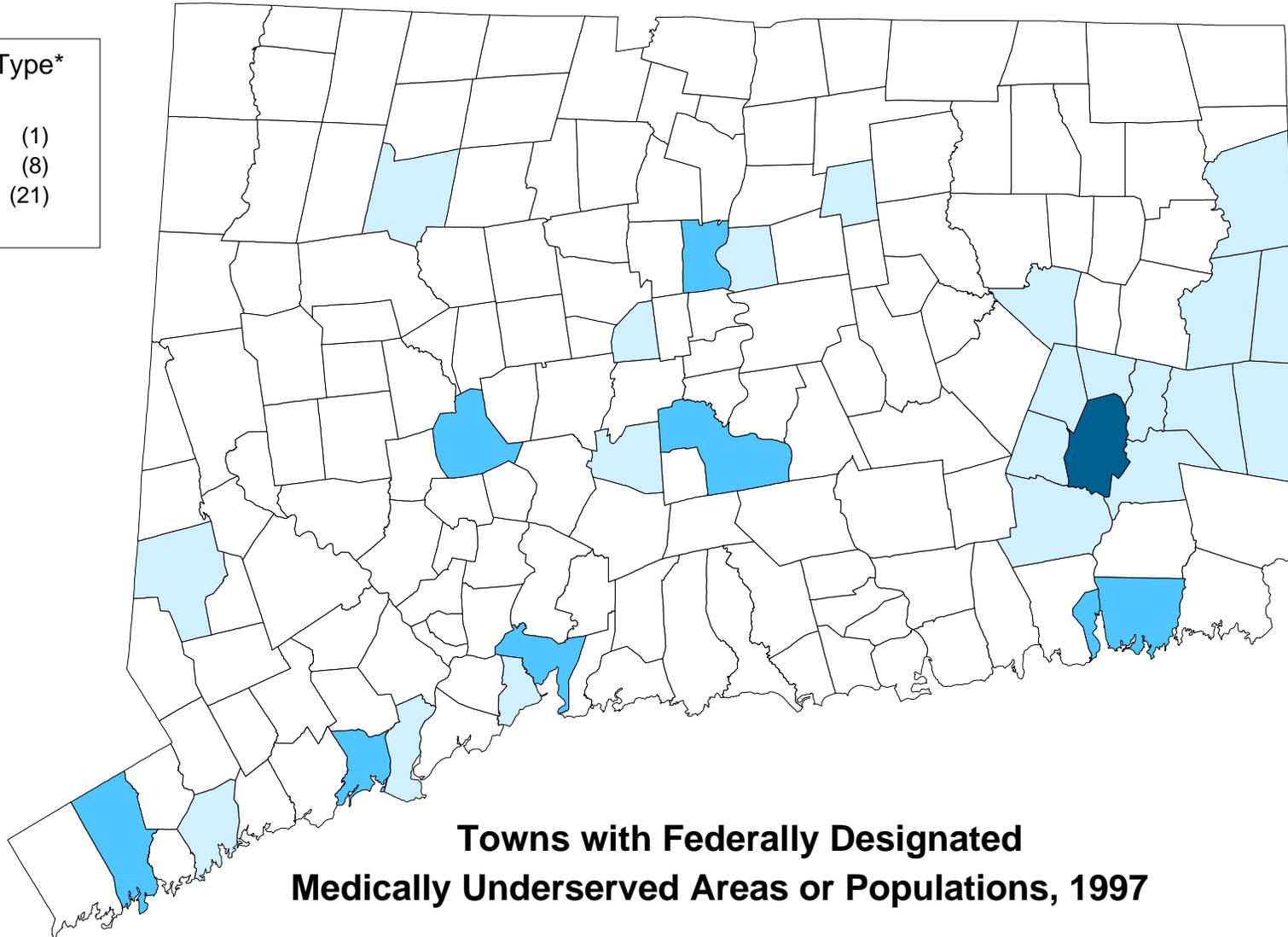
Source: DPH, OPPE, July 1997



Map 4-5

**Designation Type\***  
(# of towns)

- Both Types (1)
- Area (8)
- Population (21)

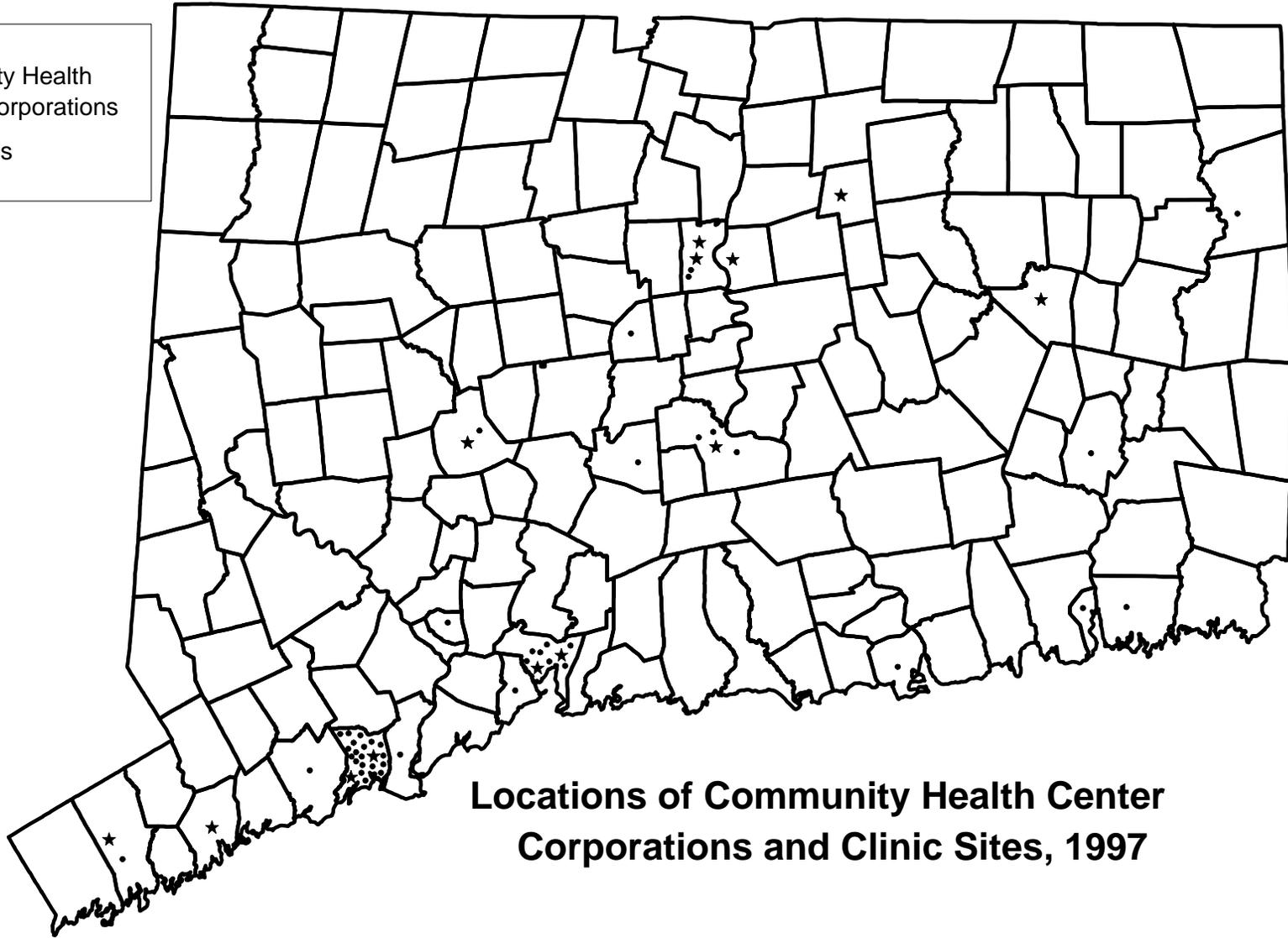


**Towns with Federally Designated  
Medically Underserved Areas or Populations, 1997**

\* The indicated areas or populations typically do not encompass an entire town.  
Source: USDHHS, HRSA, BPHC, BHCDANet Federal database, 5-97

Map 4-6

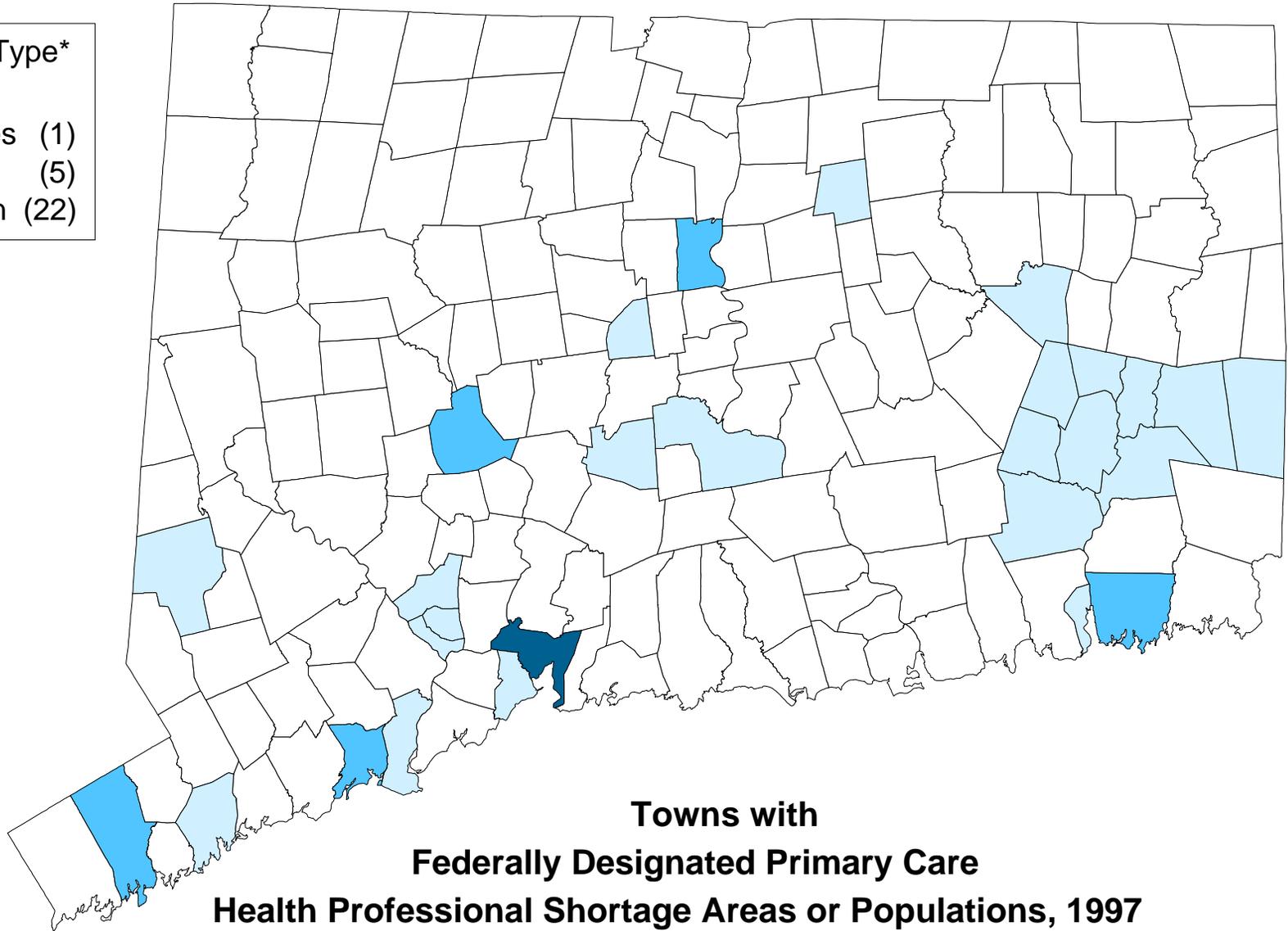
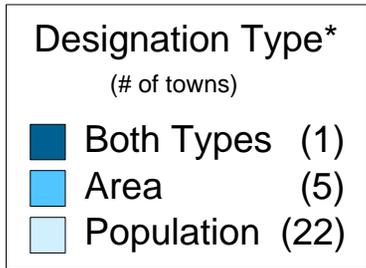
- ★ Community Health Center Corporations
- Clinic Sites



### Locations of Community Health Center Corporations and Clinic Sites, 1997

Note: The stars and dots denoting the center corporations and clinics fall randomly within a town's border and are not actual site locations.  
Source: DPH, BCH & HSRD, 1998

Map 4-7



\* The indicated areas or populations typically do not encompass an entire town.  
Source: Federal Register 5-30-97